Special Practice Problems

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~[JEE (Mains & Advanced)]~

Topics: Basic Maths & Logarithm

Objective Questions Type I [Only one correct answer]

In each of the questions below, four choices are given of which only one is correct. You have to select the correct answer which is the most appropriate.

1. If $\log_2 3 = a$, $\log_3 5 = b$ and $\log_7 2 = c$, then the logarithm of the number 63 to base 140 is

(a) $\frac{1+2ac}{2c+abc+1}$ (b) $\frac{1-2ac}{2c-abc-1}$

(c) $\frac{1-2ac}{2c+abc+1}$ (d) $\frac{1+2ac}{2c-abc-1}$

2. If $\log_5 120 + (x-3) - 2\log_5(1-5^{x-3}) = -\log_5(0.2-5^{x-4})$, then x is

(a) 1 (b) 2

(c) 3 (d) 4

3. If $x_n > x_{n-1} > \ldots > x_2 > x_1 > 1$, then the value of $\log_{x_1}\log_{x_2}\log_{x_3}\ldots\log_{x_n} x_n^{x_{n-1}^{\cdot^{\cdot^{x_1}}}}$, is

(a) 0 (b) 1

(c) 2 (d) undefined

4. The number $\log_{20} 3$ lies in

(a) $\left(\frac{1}{4},\frac{1}{3}\right)$ (b) $\left(\frac{1}{3},\frac{1}{2}\right)$

(c) $\left(\frac{1}{2},\frac{3}{4}\right)$ (d) $\left(\frac{3}{4},\frac{4}{5}\right)$

5. The number of real values of the parameter λ for which $(\log_{16} x)^2 - \log_{16} x + \log_{16}\lambda = 0$ with real coefficients will have exactly one solution is

(a) 1 (b) 2

(c) 3 (d) 4

6. If $y = 2^{\frac{1}{\log_x 4}}$, then x is equal to

(a) $\sqrt{y}$ (b) y

(c) y^2 (d) y^3

7. If $\log_2 x + \log_2 y \geq 6$, then the least value of $x+y$ is

(a) 4 (b) 8

(c) 16 (d) 32

8. A rational number which is 50 times its own logarithm to the base 10 is

(a) 1 (b) 10

(c) 100 (d) 1000

9. If $x = \log_5(1000)$ and $y = \log_7(2058)$, then

(a) $x > y$ (b) $x < y$

(c) $x = y$ (d) none of these

10. If $f(x) = \ln\left(\frac{1+x}{1-x}\right)$, then

(a) $f(x_1)\cdot f(x_2) = f(x_1+x_2)$

(b) $f(x+2) - 2f(x+1) + f(x) = 0$

(c) $f(x) + f(x+1) = f(x^2+x)$

(d) $f(x_1) + f(x_2) = f\left(\frac{x_1+x_2}{1+x_1x_2}\right)$

11. If $\log_{10} 2$, $\log_{10}(2^x+1)$, $\log_{10}(2^x+3)$ are in AP, then

(a) $x = 0$ (b) $x = 1$

(c) $x = \log_{10} 2$ (d) $x = \frac{1}{2}\log_2 5$

12. If $A = \log_2\log_2\log_4 256 + 2\log_{\sqrt{2}} 2$, then A is equal to

(a) 2 (b) 3

(c) 5 (d) 7

13. $7\log\left(\frac{16}{15}\right) + 5\log\left(\frac{25}{24}\right) + 3\log\left(\frac{81}{80}\right)$ is equal to

(a) 0 (b) 1

(c) log 2 (d) log 3

14. For $y = \log_a x$ to be defined 'a' must be

(a) any positive real number

(b) any number

(c) $\geq e$

(d) any positive real number $\neq 1$

15. If $\log_{10} 3 = 0.477$, the number of digit in 3^{40} is

(a) 18 (b) 19

(c) 20 (d) 21

16. If $x = \log_3 5$, $y = \log_{17} 25$, which one of the following is correct ?
(a) $x < y$ (b) $x = y$
(c) $x > y$ (d) None of these

17. The domain of the function $\sqrt{(\log_{0.5} x)}$ is
(a) $(1, \infty)$ (b) $(0, \infty)$
(c) $(0, 1]$ (d) $(0.5, 1)$

18. The number $\log_2 7$ is
(a) an integer (b) a rational number
(c) an irrational number (d) a prime number

19. The value of $\frac{1}{\log_2 n} + \frac{1}{\log_3 n} + \ldots + \frac{1}{\log_{43} n}$ is
(a) $\frac{1}{\log_{43!} n}$ (b) $\frac{1}{\log_{43} n}$
(c) $\frac{1}{\log_{42} n}$ (d) $\frac{1}{\log_{43} n!}$

20. $\log_{10} \tan 1° + \log_{10} \tan 2° + \ldots + \log_{10} \tan 89°$ is equal to
(a) 0 (b) 1
(c) 27 (d) 81

21. If $\log_{12} 27 = a$, then $\log_6 16$ is equal to
(a) $2\left(\frac{3-a}{3+a}\right)$ (b) $3\left(\frac{3-a}{3+a}\right)$
(c) $4\left(\frac{3-a}{3+a}\right)$ (d) $5\left(\frac{3-a}{3+a}\right)$

22. $\log_7 \log_7 \sqrt{7\sqrt{(7\sqrt{7})}}$ is equal to
(a) $3 \log_2 7$ (b) $3 \log_7 2$
(c) $1 - 3\log_7 2$ (d) $1 - 3 \log_2 7$

23. If $\frac{\log x}{b-c} = \frac{\log y}{c-a} = \frac{\log z}{a-b}$, then $x^a y^b z^c$ is equal to
(a) xyz (b) abc
(c) 0 (d) 1

24. $\frac{1}{1+\log_a bc} + \frac{1}{1+\log_b ca} + \frac{1}{1+\log_c ab}$ is equal to
(a) 0 (b) 1
(c) 2 (d) 3

25. 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

26. If x, y, z are in GP and $a^x = b^y = c^z$, then
(a) $\log_b a = \log_c b$ (b) $\log_c b = \log_a c$
(c) $\log_a c = \log_b a$ (d) $\log_a b = 2 \log_a c$

27. If $\frac{x(y+z-x)}{\log x} = \frac{y(z+x-y)}{\log y} = \frac{z(x+y-z)}{\log z}$,
then $x^y y^x = z^y y^z$ is equal to
(a) $z^x x^z$ (b) $x^z y^x$
(c) $x^y y^z$ (d) $x^x y^y$

28. If $\log_3 2, \log_3 (2^x - 5), \log_3 (2^x - 7/2)$ are in AP, then x is equal to
(a) 1 (b) 2
(c) 3 (d) 4

29. If $y = a^{\frac{1}{1-\log_a x}}$ and $z = a^{\frac{1}{1-\log_a y}}$, then x is equal to
(a) $a^{\frac{1}{1+\log_a z}}$ (b) $a^{\frac{1}{2+\log_a z}}$
(c) $a^{\frac{1}{1-\log_a z}}$ (d) $a^{\frac{1}{2-\log_a z}}$

30. If $\log_{\sqrt{8}} b = 3\frac{1}{3}$, then b is equal to
(a) 2 (b) 8
(c) 32 (d) 64

31. If $\log_{0.3} (x-1) < \log_{0.09} (x-1)$, then x lies in the interval
(a) $(-\infty, 1)$ (b) $(1, 2)$
(c) $(2, \infty)$ (d) none of these

32. The value of $3^{\log_4 5} - 5^{\log_4 3}$ is
(a) 0 (b) 1
(c) 2 (d) none of these

33. If $x^{18} = y^{21} = z^{28}$, then $3, 3 \log_y x, 3 \log_z y, 7 \log_x z$ are in
(a) AP (b) GP
(c) HP (d) AGP

34. If $\frac{1}{\log_3 \pi} + \frac{1}{\log_4 \pi} > x$, then x be
(a) 2 (b) 3
(c) π (d) none of these

35. If $\ln\left(\frac{a+b}{3}\right) = \left(\frac{\ln a + \ln b}{2}\right)$, then $\frac{a}{b} + \frac{b}{a}$ is equal to
(a) 1 (b) 3
(c) 5 (d) 7

36. If $\log_3 \{5 + 4 \log_3 (x-1)\} = 2$, then x is equal to
(a) 2 (b) 4
(c) 8 (d) $\log_2 16$

37. If $2x^{\log_4 3} + 3^{\log_4 x} = 27$, then x is equal to
(a) 2 (b) 4
(c) 8 (d) 16

38. The interval of x in which the inequality
$$5^{\frac{1}{4}(\log_5^2 x)} \geq 5x^{\frac{1}{5}(\log_5 x)}$$
(a) $(0, 5^{-2\sqrt{5}}]$ (b) $[5^{2\sqrt{5}}, \infty)$
(c) both (a) and (b) (d) none of these

39. The solution set of the equation
$\log_x 2 \log_{2x} 2 = \log_{4x} 2$ is
(a) $\{2^{-\sqrt{2}}, 2^{\sqrt{2}}\}$ (b) $\{1/2, 2\}$
(c) $\{1/4, 2^2\}$ (d) none of these

40. The least value of the expression $2 \log_{10} x - \log_x 0.01$ is
(a) 2 (b) 4
(c) 6 (d) 8

41. The solution of the equation $\log_7 \log_5(\sqrt{x+5} + \sqrt{x}) = 0$ is
(a) 1 (b) 3
(c) 4 (d) 5

42. The number of solutions of $\log_4 (x-1) = \log_2(x-3)$ is
(a) 3 (b) 1
(c) 2 (d) 0

Objective Questions Type II [One or more than one correct answer(s)]

In each of the questions below four choices of which one or more than one are correct. You have to select the correct answer(s) accordingly.

1. It is given that $x = 9$ is a solution of the equation $\ln(x^2 + 15a^2) - \ln(a - 2) = \ln\left(\frac{8ax}{a-2}\right)$, then

(a) $a = 3$
(b) $a = \frac{3}{5}$
(c) other solution is $x = 3/5$
(d) other solution is $x = 15$

2. The value of $\log\{\log_b a \cdot \log_c b \cdot \log_d c \cdot \log_a d\}$ is

(a) 0 (b) $\log abcd$
(c) $\log 1$ (d) 1

3. If $\frac{\log_2 x}{4} = \frac{\log_2 y}{6} = \frac{\log_2 z}{3k}$ and $x^3 y^2 z = 1$, then k is equal to

(a) −8 (b) −4
(c) 0 (d) $\log_2\left(\frac{1}{256}\right)$

4. If $\frac{\log a}{(b-c)} = \frac{\log b}{(c-a)} = \frac{\log c}{(a-b)}$, then $a^{b+c} \cdot b^{c+a} \cdot c^{a+b}$ is equal to

(a) 0 (b) 1
(c) $a + b + c$ (d) $\log_b a \cdot \log_c b \cdot \log_a c$

5. The expression

$$5^{\log_{1/5}(1/2)} + \log_{\sqrt{2}}\left(\frac{4}{\sqrt{7}+\sqrt{3}}\right) + \log_{1/2}\left(\frac{1}{10 + 2\sqrt{21}}\right)$$

simplifies to

(a) 6 (b) 4
(c) $\sqrt{6\sqrt{6\sqrt{6\sqrt{6\ldots\infty}}}}$ (d) $3^{\log_{1/3}\left(\frac{1}{6}\right)}$

6. If $\log_a x = \alpha$, $\log_b x = \beta$, $\log_c x = \gamma$ and $\log_d x = \delta$, $x \neq 1$ and $a, b, c, d \neq 0, > 1$, then $\log_{abcd} x$ equals

(a) $\leq \frac{\alpha + \beta + \gamma + \delta}{16}$ (b) $\geq \frac{\alpha + \beta + \gamma + \delta}{16}$
(c) $\frac{1}{\alpha^{-1} + \beta^{-1} + \gamma^{-1} + \delta^{-1}}$ (d) $\frac{1}{\alpha\beta\gamma\delta}$

7. $\log_p \log_p \underbrace{\sqrt[p]{\sqrt[p]{\sqrt[p]{\ldots \sqrt[p]{p}}}}}_{n \text{ times}}$, $p > 0$ and $p \neq 1$, is equal to

(a) n (b) $-n$
(c) $\frac{1}{n}$ (d) $\log_{1/p}(p^n)$

8. Sum of the roots of the equation $x + 1 = 2\log_2(2^x + 3) - 2\log_4(1980 - 2^{-x})$ is

(a) $\log_{11} 2$ (b) $\log_2 11$
(c) $\log_{11}(0.5)$ (d) $\log_{0.5}\left(\frac{1}{11}\right)$

9. If $a^x = b$, $b^y = c$, $c^z = a$, $x = \log_b a^{k_1}$, $y = \log_c b^{k_2}$, $z = \log_a c^{k_3}$, then $k_1 k_2 k_3$ is equal to

(a) 1 (b) abc
(c) (xyz) (d) 0

10. If $\frac{\ln a}{b-c} = \frac{\ln b}{c-a} = \frac{\ln c}{a-b}$, $a, b, c > 0$, then

(a) $a^{b+c} \cdot b^{c+a} \cdot c^{a+b} = 1$
(b) $a^{b+c} + b^{c+a} + c^{a+b} \geq 3$
(c) $a^{b+c} \cdot b^{c+a} \cdot c^{a+b} = 3$
(d) $a^{b+c} + b^{c+a} + c^{a+b} \geq 3(3)^{1/3}$

11. If $\frac{\ln a}{y-z} = \frac{\ln b}{z-x} = \frac{\ln c}{x-y}$, then

(a) $a^x \cdot b^y \cdot c^z = 1$
(b) $a^{y^2+yz+z^2} \cdot b^{z^2+zx+x^2} \cdot c^{x^2+xy+y^2} = 1$
(c) $a^{y+z} \cdot b^{z+x} \cdot c^{x+y} = 1$
(d) $abc = 1$

12. The solution of the equation $3^{\log_a x} + 3x^{\log_a 3} = 2$ is given by

(a) $a^{\log_3 a}$
(b) $(2/a)^{\log_3 2}$
(c) $a^{-\log_3 2}$
(d) $2^{-\log_3 a}$

Linked-Comprehension Type

In these questions, a passage (paragraph) has been given followed by questions based on each of the passages. You have to answer the questions based on the passage given.

PASSAGE 1

An equation of the form $2m \log_a f(x) = \log_a g(x), a > 0, a \neq 1, m \in N$

$\begin{cases} f(x) > 0 \\ f^{2m}(x) = g(x) \end{cases}$ is equivalent to the system

On the basis of above information, answer the following questions :

1. The number of solutions of $2\log_e 2x = \log_e(7x - 2 - 2x^2)$ is
   (a) 1 (b) 2
   (c) 3 (d) infinite
2. The number of solutions of $\ln 2x = 2\ln(4x - 15)$ is
   (a) 0 (b) 1
   (c) 2 (d) infinite
3. The number of solutions of $\log(3x^2 + x - 2) = 3\log(3x - 2)$ is
   (a) 1 (b) 2
   (c) 3 (d) 0
4. Solution set of the equation $\log_{(x^3+6)}(x^2 - 1) = \log_{(2x^2+5x)}(x^2 - 1)$ is
   (a) $\{-2\}$ (b) $\{1\}$
   (c) $\{3\}$ (d) $\{-2, 1, 3\}$
5. Solution set of the equation $\log(x - 9) + 2\log\sqrt{(2x - 1)} = 2$ is
   (a) $\{\phi\}$ (b) $\{1\}$
   (c) $\{2\}$ (d) $\{13\}$

PASSAGE 2

Equations of the form (i) $f(\log_a x) = 0, a > 0, a \neq 1$ and (ii) $g(\log_x A) = 0, A > 0$, then Eq. (i) is equivalent to $f(t) = 0$, where $t = \log_a x$.

If $t_1, t_2, t_3, \ldots, t_k$ are the roots of $f(t) = 0$, then $\log_a x = t_1, \log_a x = t_2, \ldots, \log_a x = t_k$ and Eq. (ii) is equivalent to $f(y) = 0$, where $y = \log_x A$. If $y_1, y_2, y_3, \ldots, y_k$ are the roots of $f(y) = 0$, then $\log_x A = y_1, \log_x A = y_2, \ldots, \log_x A = y_k$.

On the basis of above information, answer the following questions :

1. The number of solutions of the equation $\dfrac{1 - 2(\log x^2)^2}{\log x - 2(\log x)^2} = 1$ is
   (a) 0 (b) 1
   (c) 2 (d) infinite
2. The number of solutions of the equation $\log_x^3 10 - 6\log_x^2 10 + 11\log_x 10 - 6 = 0$ is
   (a) 0 (b) 1
   (c) 2 (d) 3
3. The solution set of $(\log_5 x)^2 + \log_5 x + 1 = \dfrac{7}{\log_5 x - 1}$ contains
   (a) (1, 3) (b) $\{1\}$
   (c) $\{25\}$ (d) $\{1, 25\}$
4. The set of all x satisfying the equation $x^{\log_3 x^2 + (\log_3 x)^2 - 10} = \dfrac{1}{x^2}$ is
   (a) $\{1, 9\}$ (b) $\{9, \frac{1}{81}\}$
   (c) $\{1, 4, \frac{1}{81}\}$ (d) $\{1, 9, \frac{1}{81}\}$
5. If $\dfrac{(\ln x)^2 - 3\ln x + 3}{\ln x - 1} < 1$, then x belongs to
   (a) $(0, e)$ (b) $(1, e)$
   (c) $(1, 2e)$ (d) $(0, 3e)$

Matrix-Match Type

Given below are Matching Type Questions, with two columns (each having some items) each . Each item of Column I has to be matched with the items of Column II, by encircling the correct match(es).

NOTE An item of Column I can be matched with more than one items of Column II. All the items of Column II have to be matched.

1. Observe the following columns :

	Column I		Column II
(A)	If $\log_{34} 5$ lies in the interval (a, b), then	(P)	$[10a + 10b] = 8$, where [.] denotes the greatest integer function
(B)	If $\log_{300} 4$ lies in the interval (a, b), then	(Q)	$(10a + 10b) = 5$ where (.) denotes the least integer function
(C)	If $\log_{400} 3$ lies in the interval (a, b), then	(R)	$[6b - 3a] = 2$ where [.] denotes the greatest integer function
		(S)	$[10a + 10b] = 3$ where [.] denotes the greatest integer function
		(T)	$(6b - 3a) = 1$ where (.) denotes the least integer function

(A) (P) (Q) (R) (S) (T) (B) (P) (Q) (R) (S) (T) (C) (P) (Q) (R) (S) (T)

2. Observe the following columns :

	Column I		Column II
(A)	The solution set of $\log_{100} \lvert x + y \rvert = \frac{1}{2}$, $\log_{10} y - \log_{10} \lvert x \rvert = \log_{100} 4$ is	(P)	$\{\sqrt{2}, 2\}$
(B)	The solution set of $4\log_2^2 x + 1 = 2\log_2 y$ and $\log_2 x^2 \geq \log_2 y$	(Q)	$\{1, 1\}$
(C)	The solution set of $\log_4 x - \log_2 y = 0$ and $x^2 - 5y^2 + 4 = 0$	(R)	$\{-10, 20\}$
		(S)	$\{4, 2\}$
		(T)	$\left\{\frac{10}{3}, \frac{20}{3}\right\}$

(A) (P) (Q) (R) (S) (T) (B) (P) (Q) (R) (S) (T) (C) (P) (Q) (R) (S) (T)

Answers

Objective Questions Type I [Only one correct answer]

1. (a) **2.** (a) **3.** (b) **4.** (b) **5.** (a) **6.** (c) **7.** (c) **8.** (c) **9.** (a) **10.** (d)
11. (d) **12.** (c) **13.** (c) **14.** (d) **15.** (c) **16.** (c) **17.** (c) **18.** (c) **19.** (a) **20.** (a)
21. (c) **22.** (c) **23.** (d) **24.** (b) **25.** (c) **26.** (a) **27.** (a) **28.** (c) **29.** (c) **30.** (c)
31. (b) **32.** (a) **33.** (a) **34.** (a) **35.** (d) **36.** (b) **37.** (d) **38.** (c) **39.** (a) **40.** (b)
41. (c) **42.** (b)

Objective Questions Type II [One or more than one correct answer(s)]

1. (a, d) **2.** (a, c) **3.** (a, d) **4.** (b, d) **5.** (a, c, d)
6. (a, c) **7.** (b, d) **8.** (b, d) **9.** (a, c) **10.** (a, b)
11. (a, b, c, d) **12.** (c, d)

Linked-Comprehension Type

Passage 1 **1.** (b) **2.** (b) **3.** (d) **4.** (c) **5.** (d) **Passage 2** **1.** (c) **2.** (d) **3.** (c) **4.** (d) **5.** (a)

Matrix-Match Type

1. A→ (P, R); B→ (Q, T); C→ (S, T) **2.** A→ (R, T); B→ (P); C→ (Q, S)

61. The values of x which satisfy the equation
$\sqrt{(5x^2-8x+3)}-\sqrt{(5x^2-9x+4)}$
$=\sqrt{(2x^2-2x)}-\sqrt{(2x^2-3x+1)}$ are
(a) 3 (b) 2
(c) 1 (d) 0

62. The number of number-pairs (x, y) which will satisfy the equation $x^2-xy+y^2=4(x+y-4)$ is
(a) 1 (b) 2
(c) 4 (d) none of these

63. The solution set of the equation $\log_x 2 \log_{2x} 2 = \log_{4x} 2$ is
(a) $\{2^{-\sqrt{2}}, 2^{\sqrt{2}}\}$ (b) $\left\{\frac{1}{2}, 2\right\}$
(c) $\left\{\frac{1}{4}, 2^2\right\}$ (d) none of these

64. For any real x the expression $2(k-x)[x+\sqrt{x^2+k^2}]$ can not exceed
(a) k^2 (b) $2k^2$
(c) $3k^2$ (d) none of these

65. The solution of $\left|\frac{x}{x-1}\right|+|x|=\frac{x^2}{|x-1|}$ is
(a) $x \geq 0$ (b) $x > 0$
(c) $x \in (1, \infty)$ (d) none of these

66. The number of positive integral solutions of $\frac{x^2(3x-4)^3(x-2)^4}{(x-5)^5(2x-7)^6} \leq 0$ is
(a) four (b) three
(c) two (d) only one

67. The number of real solutions of the equation $\left(\frac{9}{10}\right)^x = -3+x-x^2$ is
(a) none (b) one
(c) two (d) more than two

68. The equation $|x+1|^{\log_{(x+1)}(3+2x-x^2)} = (x-3)|x|$ has
(a) unique solution (b) two solutions
(c) no solution (d) more than two solutions

69. If $xy = 2(x+y)$, $x \leq y$ and $x, y \in N$, the number of solutions of the equation
(a) two
(b) three
(c) no solution
(d) infinitely many solutions

70. The number of real solutions of the system of equations $x=\frac{2z^2}{1+z^2}, y=\frac{2x^2}{1+x^2}, z=\frac{2y^2}{1+y^2}$ is
(a) 1 (b) 2
(c) 3 (d) 4

71. The number of negative integral solutions of $x^2 \cdot 2^{x+1} + 2^{|x-3|+2} = x^2 \cdot 2^{|x-3|+4} + 2^{x-1}$ is
(a) none (b) only one
(c) two (d) four

72. If a be a positive integer, the number of values of a satisfying
$\int_0^{\pi/2}\left[a^2\left(\frac{\cos 3x}{4}+\frac{3}{4}\cos x\right)+a\sin x-20\cos x\right]dx \leq -\frac{a^2}{3}$ is
(a) only one (b) two
(c) three (d) four

73. For the equation $|x^2-2x-3|=b$ which statement or statements are true
(a) for $b<0$ there are no solutions
(b) for $b=0$ there are three solutions
(c) for $0<b<1$ there are four solutions
(d) for $b=1$ there are two solutions

74. If $y=2[x]+3=3[x-2]+5$, then $[x+y]$ is ($[x]$ denotes the integral part of x)
(a) 10 (b) 15
(c) 12 (d) none of these

75. The roots of the equation $(3-x)^4+(2-x)^4=(5-2x)^4$ are
(a) all real
(b) all imaginary
(c) two real and two imaginary
(d) none of the above

76. The number of ordered 4-tuple (x, y, z, w), $(x, y, z, w \in [0, 10])$ which satisfies the inequality $2^{\sin^2 x}3^{\cos^2 y}4^{\sin^2 z}5^{\cos^2 w} \geq 120$ is
(a) 0 (b) 144
(c) 81 (d) infinite

77. Let $F(x)$ be a function defined by $F(x)=x-[x]$, $0 \neq x \in R$, where $[x]$ is the greatest integer less than or equal to x. Then the number of solutions of $F(x)+F(1/x)=1$ is/are
(a) 0 (b) infinite
(c) 1 (d) 2

78. The largest interval in which $x^{12}-x^9+x^4-x+1>0$ is
(a) $[0, \infty)$ (b) $(-\infty, 0]$
(c) $(-\infty, \infty)$ (d) none of these

79. The system of equation $|x-1|+3y=4$, $x-|y-1|=2$ has
(a) no solution
(b) a unique solution
(c) two solutions
(d) more than two solutions

80. If $5\{x\}=x+[x]$ and $[x]-\{x\}=\frac{1}{2}$, where $\{x\}$ and $[x]$ are fractional and integral part of x, then x is
(a) 1/2 (b) 3/2
(c) 5/2 (d) 7/2

81. If $c>0$ and the equation $3ax^2+4bx+c=0$ has no real root, then
(a) $2a+c>b$ (b) $a+2c>b$
(c) $3a+c>4b$ (d) $a+3c<b$

Answers:-

61. (c) 62. (a) 63. (a) 64. (b) 65. (c) 66. (b) 67. (a) 68. (c) 69. (a) 70. (a)
71. (a) 72. (d) 73. (a) 74. (b) 75. (c) 76. (b) 77. (b) 78. (c) 79. (b) 80. (b)
81. (c)