Class:XI **Time: 42 Min.** **M.M:37** **DPP. NO.- 4**

[STRAIGHT OBJECTIVE TYPE] [5 × 3 = 15]

Q.1 If $x = \log_b(7)^7$ satisfies the equation $7^{x+7} = 8^x$, then the value of b is equal to

(A) $\frac{15}{7}$ (B) $\frac{15}{8}$ (C) $\frac{7}{8}$ (D) $\frac{8}{7}$

Q.2 Let B, C, P and L be positive real numbers such that
$\log(B \cdot L) + \log(B \cdot P) = 2$; $\log(P \cdot L) + \log(P \cdot C) = 3$; $\log(C \cdot B) + \log(C \cdot L) = 4$
The value of the product (BCPL) equals (base of the log is 10)
(A) 10^2 (B) 10^3 (C) 10^4 (D) 10^9

Q.3 The value of the expression $5^{\frac{\log_3(\log_2 81)}{\log_3 5}}$ always lies between
(A) 5 and 6 (B) 7 and 8 (C) 6 and 7 (D) 8 and 9

Q.4 If $\log_a(ab) = x$, then $\log_b(ab)$ is equal to

(A) $\frac{1}{x}$ (B) $\frac{x}{1+x}$ (C) $\frac{x}{x-1}$ (D) $\frac{x}{1-x}$

Q.5 If x_1 and x_2 are the solution of the equation $7^{\frac{2x^2-5x-9}{2}} = \left(\sqrt{2}\right)^{3\log_2 7}$, then $(x_1 x_2)$ has the value equal to

(A) $\frac{5}{2}$ (B) 6 (C) – 6 (D) 4

[MATCH THE COLUMN] [3+3+3+3=12]

Q.6

	Column-I	Column-II
(A)	If $a = 3\left(\sqrt{8+2\sqrt{7}} - \sqrt{8-2\sqrt{7}}\right)$, $b = \sqrt{(42)(30)+36}$ then the value of $\log_a b$ is equal to	(P) 0
(B)	Number of real solutions of the equation $\lvert x-1\rvert + \lvert x-3\rvert = \frac{3}{2}$ is	(Q) 1
(C)	If $a = \sqrt{6+2\sqrt{5}} - \sqrt{6-2\sqrt{5}}$, $b = \sqrt[3]{17\sqrt{5}+38} - \sqrt[3]{17\sqrt{5}-38}$ then the value of $\log_a b$ is equal to	(R) 2
(D)	If $\sin x + \sin^2 x = 1$ then the value of $\cos^2 x + \cos^4 x$ equals	(S) 3

[SUBJECTIVE / INTEGER TYPE]

Q.7 If $\sec\theta + \tan\theta = 2$, then find the value of $\sec\theta$? **[5]**

Q.8 Let $a = \sqrt{57+40\sqrt{2}} - \sqrt{57-40\sqrt{2}}$ and $b = \sqrt{25^{\frac{1}{\log_8 5}} + 49^{\frac{1}{\log_6 7}}}$ and c is the value of $x^3 + 3x - 14$ where $x = \sqrt[3]{7+5\sqrt{2}} - \frac{1}{\sqrt[3]{7+5\sqrt{2}}}$. Find the value of $(a + b + c)$. **[5]**

Class:XI **Time: 45 Min.** **M.M:36** **DPP. NO.- 5**

[STRAIGHT OBJECTIVE TYPE] [4 × 3 = 12]

Q.1 Let $n = \sqrt{6+\sqrt{11}} + \sqrt{6-\sqrt{11}} - \sqrt{22}$ then

(A) $n \geq 1$ (B) $0 < n < 1$ (C) $n = 0$ (D) $-1 < n < 0$

Q.2 If $\log_a b = 2$; $\log_b c = 2$ and $\log_3 c = 3 + \log_3 a$ then $(a + b + c)$ equals

(A) 90 (B) 93 (C) 102 (D) 243

Q.3 If $x + y = 1$ and $x^2 + y^2 = 2$ then the value of $(x^5 + y^5)$ equals

(A) 7 (B) 6 (C) $\frac{23}{4}$ (D) $\frac{19}{4}$

Q.4 Number of real numbers x satisfying the equation

$\log_3 x - 2 = \sqrt{\log_3 x^3 - 8}$ is

(A) 0 (B) 1 (C) 2 (D) 3

[MATCH THE COLUMN] [3+3+3+3=12]

Q.5

	Column-I	Column-II
(A)	Anti logarithm of $(0.\overline{6})$ to the base 27 has the value equal to	(P) 5
(B)	Characteristic of the logarithm of 2008 to the base 2 is	
(C)	The value of b satisfying the equation, $\log_e 2 \cdot \log_b 625 = \log_{10} 16 \cdot \log_e 10$ is	(Q) 7
(D)	Number of naughts after decimal before a significant figure comes in the number $\left(\frac{5}{6}\right)^{100}$, is	(R) 9
		(S) 10

[SUBJECTIVE]

Q.6 Solve the equation, $\sqrt{\log(-x)} = \log\sqrt{x^2}$ (base is 10) **[3]**

Q.7 The length of a common internal tangent to two circles is 7 and a common external tangent is 11. Compute the product of the radii of the two circles . **[4]**

Q.8 If $2\left(\sqrt{3+\sqrt{5-\sqrt{13+\sqrt{48}}}}\right) = \sqrt{a} + \sqrt{b}$ where a and b are natural number find (a + b). **[5]**