MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 4

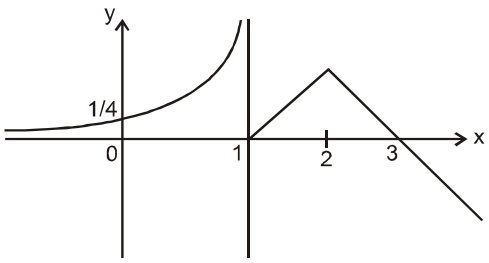
Total Marks : 30

Max. Time : 31 min.

Topics : **Fundamentals of Mathematics, Quadratic Equation, Function**

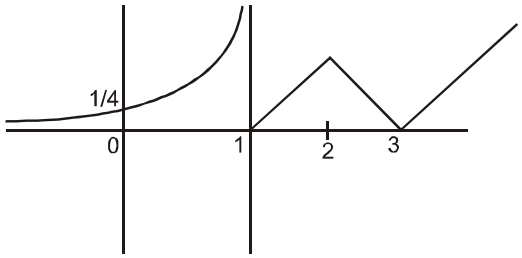
Type of Questions		**M.M., Min.**
Single choice Objective (no negative marking) Q. 1, 2, 3, 4	**(3 marks, 3 min.)**	**[12, 12]**
Short Subjective Questions (no negative marking) Q. 5, 6	**(3 marks, 3 min.)**	**[6, 6]**
Subjective Questions (no negative marking) Q. 7	**(4 marks, 5 min.)**	**[4, 5]**
Match the Following (no negative marking) Q.8	**(8 marks, 8 min.)**	**[8, 8]**

1. The graph of y = f(x) is given below

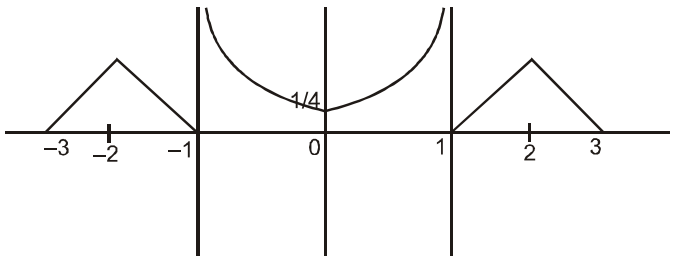


then the graph of y = |f(|x|)| is :

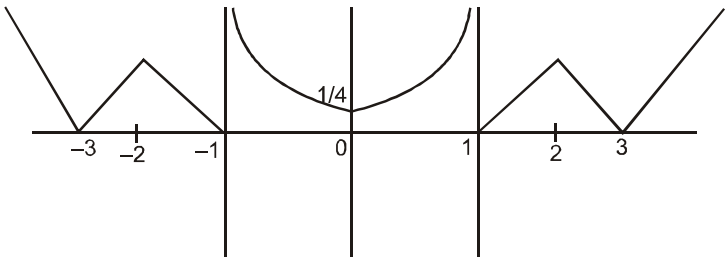
(A)



(B)



(C)



(D) none of these

2. If $(x - a)(x - 5) + 2 = 0$ has only integral roots where $a \in I$, then value of 'a' can be :

(A) 8 (B) 7 (C) 6 (D) 5

3. If $x^2 - (a - 3)x + a = 0$ has atleast one positive root then

(A) $a \in (-\infty, 0) \cup [7, 9]$ (B) $a \in (-\infty, -1) \cup [7, \infty)$

(C) $a \in (-\infty, 0) \cup [9, \infty)$ (D) none of these

4. If $\log_4(x + 2y) + \log_4 (x - 2y) = 1$, then the minimum value of $|x| - y$ is

(A) $\sqrt{2}$ (B) $\sqrt{3}$ (C) $\sqrt{4}$ (D) $\sqrt{5}$

5. For what values of a does the equation $2 \log_3^2 x - |\log_3 x| + a = 0$ possess four solutions ?

6. If $\sqrt{ab}$ is irrational then prove that $\sqrt{a} + \sqrt{b}$ irrational.(where $a > 0$, $b > 0$, $a, b \in Q$)

7. Prove that , $[x] + [5x] + [10x] + [20x] = 36k + 35$, $k \in I$ does not have any real solution . Here [.] denotes greatest integer function.

8. Match the column

Column – I		**Column – II**	
(A)	Number of roots of the equation $\sin x = \ell n\, x$	(p)	1
(B)	Number of integral solution of the inequality $\|\|x-2\|-3\| \le 0$	(q)	2
(C)	Number of distinct real roots of the equation $x^3 - 3x + 2 = 0$	(r)	3
(D)	Absolute value of the sum of the coefficients of the quotient when $x^5 - 4x^2 + 2x + 1$ is divided by $(x - 1)$	(s)	4

Answers Key

1. (C) **2.** (A) **3.** (C) **4.** (B)

5. for all $x \in (0, 1/8)$

8. (A $\rightarrow$ p), (B $\rightarrow$ q), (C $\rightarrow$ q), (D $\rightarrow$ p)