MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 9

Total Marks : 30

Max. Time : 34 min.

Topic : Fundamentals of Mathematics

Type of Questions		**M.M., Min.**
Comprehension (no negative marking) Q.1 to 3	**(3 marks, 3 min.)**	**[9, 9]**
Single choice Objective (no negative marking) Q.4	**(3 marks, 3 min.)**	**[3, 3]**
True or False (no negative marking) Q.5	**(2 marks, 2 min.)**	**[2, 2]**
Subjective Questions (no negative marking) Q.6,7,8,9	**(4 marks, 5 min.)**	**[16, 20]**

COMPREHENSION (Q.No. 1 to 3)

Consider the equation $2^{|x+1|} - 2^x = |2^x - 1| + 1$

1. The least value of x satisfying the equation is

(A) 0 (B) 2 (C) 4 (D) none of these

2. Number of integers less than 15 satisfying the equation are

(A) 14 (B) 15 (C) 16 (D) none of these

3. Number of composite numbers less than 20 which are coprime with 4 satisfying the given equation is/ are

(A) 2 (B) 3 (C) 4 (D) 5

4. If the solution of the equation $|(x^4-9) - (x^2+3)| = |x^4 - 9| - |x^2 + 3|$ is $(-\infty, p] \cup [q, \infty)$ then value of p + q is

(A) 0 (B) 4 (C) 1 (D) –1

5. State whether the following statements are **True** or **False**

(i) If $\frac{1}{|a|} > \frac{1}{b}$, then $|a| < b$, where a & b are non-zero real numbers.

(ii) If $\frac{1}{a} > \frac{1}{|b|}$, then $a < |b|$, where a & b are non-zero real numbers.

6. Simplify : $\frac{x}{x-y} - \frac{y}{x+y} - \frac{2xy}{x^2-y^2}$

7. Solve the following equations

(i) $|x| + 2|x - 6| = 12$

(ii) $||x + 3| - 5| = 2$

(iii) $|||x - 2| - 2| - 2| = 2$

8. Let $f(x) = |x - 2| + |x - 4| - |2x - 6|$, then find the sum of the largest and smallest values of f(x) if $x \in [2,8]$.

9. Draw the labelled graph of following

(i) $y = |7 - 2x|$

(ii) $y = |x - 1| - |3x - 2|$

(iii) $y = |x - 1| + |x - 4| + |x - 7|$

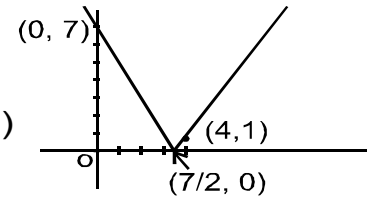
Answers Key

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

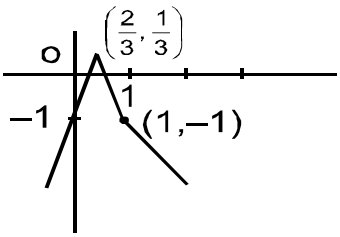
5. (i) False (ii) True **6.** $\frac{x-y}{x+y}$

7. (i) x = 0, 8 (ii) x = –10, –6, 0, 4
(iii) x = 0, ± 4, 8 **8.** 2

9. (i)



(ii)



(iii)