MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 3

Total Marks : 34

Max. Time : 37 min.

Topics : Fundamentals of Mathematics, Complex number

Type of Questions		M.M., Min.
Comprehension (no negative marking) Q.1 to Q.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]
Fill in the Blanks (no negative marking) Q.6, 7	(4 marks, 4 min.)	[8, 8]
Subjective Questions (no negative marking) Q.8 to Q.10	(4 marks, 5 min.)	[12, 15]

COMPREHENSION (Q.No. 1 to 3)

Consider the number

N = 7 7 4 9 5 8 P 9 6 Q

1. If P = 2 and the number N is divisible by 3, then number of possible values of Q is/are

(A) 0 (B) 2 (C) 3 (D) 4

2. If N is divisible by 4, then

(A) P can be any integer and Q = 0, 2, 4, 6, 8

(B) P can be any rational number and Q = 0, 4, 8

(C) P can be any single digit whole number and Q = 0, 4, 8

(D) P can be any real number and Q = 0, 4, 8

3. If N is divisible by 8 and 9 both, then number of possible ordered pair (P, Q) is/are

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

4. A set of 'n' numbers has the sum 's'. Each number of the set is increased by 20, then multiplied by 5 and then decreased by 20. The sum of the numbers in the new set thus obtained is :

(A) s + 20 n (B) 5s + 80n (C) s (D) 5s + 4n

5. Consider the following statements

(i) The sum of a rational number with an irrational number is always irrational.

(ii) The product of two rational numbers is always rational.

(iii) The product of two irrationals is always irrationals.

(iv) The sum of two rational is always rational.

(v) The sum of two irrationals is always irrational.

The correct order of True/False of above statements is :

(A) T F T F F (B) F F T T T (C) T T F T F (D) T T F F T

6. The number $3.1\overline{45}$ when expressed as a rational number in lowest form, is equal to _____.

7. OABC is a rhombus whose three vertices A, B and C lie on a circle with centre O. If the radius of the circle is 10 cm, then area of rhombus is .....

8. Which is greater ?

(i) $\sqrt[3]{3}$ or $\sqrt[4]{5}$ (ii) $\sqrt[8]{12}$ or $\sqrt[4]{6}$ (iii) $\sqrt{2}$ or $\sqrt[3]{3}$

9. Find real values of x and y for which the complex numbers $-3 + ix^2y$ and $x^2 + y + 4i$ are conjugate of each other.

10. Express the following in the form of a + ib

(i) (1 + i) (1 + 2i) (ii) $\frac{3+2i}{-2+i}$ (iii) $\frac{1}{(2+i)^2}$

(iv) $\frac{(1+i)\left(1+\sqrt{3}\,i\right)}{1-i}$ (v) $\left(\frac{(1+2i)}{5}\right)^3$

Answers Key

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

5. (C) **6.** 173/55 **7.** $50\sqrt{3}$ sq. cm.

8. (i) $\sqrt[4]{5}$ (ii) $\sqrt[4]{6}$ (iii) $\sqrt[3]{3}$

9. $x = 1, y = -4; x = -1, y = -4$

10. (i) $-1 + 3i$ (ii) $-\frac{4}{5} - \frac{7}{5}i$ (iii) $\frac{3}{25} - \frac{4}{25}i$

(iv) $-\sqrt{3} + i$ (v) $-\frac{11}{125} - \frac{2}{125}i$