MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 40

Total Marks : 26

Max. Time : 24 min.

Topic : Complex Numbers

Type of Questions		**M.M., Min.**
Single choice Objective (no negative marking) Q.1,2,3,4	**(3 marks, 3 min.)**	**[12, 12]**
Multiple choice objective (no negative marking) Q.5,6	**(5 marks, 4 min.)**	**[10, 8]**
Fill in the Blanks (no negative marking) Q.7	**(4 marks, 4 min.)**	**[4, 4]**

1. The value of $\left|\sqrt{3-4i}\,.\,\sqrt{5+12i}\right|$ is

(A) 65 (B) $\sqrt{65}$ (C) $13\sqrt{5}$ (D) none of these

2. If z is a complex number such that |z| = 4 and arg(z) = $\frac{5\pi}{6}$, then z is equal to o

(A) $-2\sqrt{3}+2i$ (B) $2\sqrt{3}+i$ (C) $2\sqrt{3}-2i$ (D) $-\sqrt{3}+i$

3. If $x + iy = \frac{3}{\cos\theta + i\sin\theta + 2}$, then $4x - x^2 - y^2$ is a real number equal to

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

4. The number $\left(1+\cos\frac{\pi}{3}+i\sin\frac{\pi}{3}\right)^6$ when simplified reduces to:

(A) 27 (B) -27 (C) $27(1+i)$ (D) none

5. If $z^3 - iz^2 - 2iz - 2 = 0$, then z can be equal to :

(A) $1 - i$ (B) i (C) $1 + i$ (D) $-1 - i$

6. If $z = 1 + \cos\frac{10\pi}{9} + i\sin\frac{10\pi}{9}$, then

(A) $|z| = 2\cos\frac{5\pi}{9}$ (B) $\text{Arg}(z) = \frac{5\pi}{9}$ (C) $|z| = 2\cos\frac{4\pi}{9}$ (D) $\text{Arg}(z) = -\frac{4\pi}{9}$

7. The solution set of the equation, $z^2 + (3 + 2i)z - 7 + 17i = 0$ where z is a complex number expressed in the form of a + bi is _____.

Answers Key

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

5. (B)(C)(D) **6.** (C)(D) **7.** $2 - 3i; -5 + i$