

Topic : Complex Number

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]

1. If $z = \left(\frac{\sqrt{3}}{2} + \frac{i}{2}\right)^5 + \left(\frac{\sqrt{3}}{2} - \frac{i}{2}\right)^5$, then :

- (A) $\text{Re}(z) = 0$ (B) $\text{Im}(z) = 0$
(C) $\text{Re}(z) > 0, \text{Im}(z) > 0$ (D) $\text{Re}(z) > 0, \text{Im}(z) < 0$

2. If $\left|\frac{z_1 - 3z_2}{3 - z_1\bar{z}_2}\right| = 1$ and $|z_2| \neq 1$, then $|z_1|$ is

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

3. If $Z_1 = 1 - i$ and $Z_2 = -2 + 4i$, then $\text{Im}\left(\frac{Z_1 Z_2}{\bar{Z}_1}\right)$ is equal to

- (A) 2 (B) 4 (C) 8 (D) none of these

4. The conjugate complex number of $\frac{2-i}{(1-2i)^2}$ is :

- (A) $\frac{2}{25} + \frac{11}{25}i$ (B) $\frac{2}{25} - \frac{11}{25}i$ (C) $-\frac{2}{25} + \frac{11}{25}i$ (D) $-\frac{2}{25} - \frac{11}{25}i$

5. For $n \in \mathbb{N}$, $\left(\frac{2i}{1+i}\right)^n$ is a positive integer if $n =$

- (A) 2 (B) 4 (C) 8 (D) 16

6. If $z_1 = a + ib$ & $z_2 = c + id$ ($a, b, c, d \in \mathbb{R}$) are complex numbers such that $|z_1| = |z_2| = 1$ and $\text{Re}(z_1 z_2) = 0$, then the pair of complex numbers $w_1 = a + ic$ & $w_2 = b + id$ satisfies :

- (A) $|w_1| = 1$ (B) $|w_2| = 1$ (C) $\text{Re}(w_1 w_2) = 0$ (D) none



Answers Key

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

6. (A)(B)(C)