

# Chapter-2 Complex Number

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## PASSAGE – 1

Let **A, B, C** be three sets of complex number as defined below

$$\mathbf{A} = \{z : \operatorname{Im} z \geq 1\}$$

$$\mathbf{B} = \{z : |z - 2 - i| = 3\}$$

$$\mathbf{C} = \{z : \operatorname{Re}((1 - i)z) = \sqrt{2}\}$$

- 1) The number of element in the set  $\mathbf{A} \cap \mathbf{B} \cap \mathbf{C}$  is (2008)

(a) 0 (b) 1 (c) 2 (d)  $\infty$

- 2) Let  $z$  be any point in  $\mathbf{A} \cap \mathbf{B} \cap \mathbf{C}$ . Then,  $|z + 1 - i|^2 + |z - 5 - i|^2$  lies between (2008)

(a) 25 and 29 (b) 30 and 34

(c) 35 and 39 (d) 40 and 44

- 3) Let  $z$  be any point  $\mathbf{A} \cap \mathbf{B} \cap \mathbf{C}$  and let  $w$  be any point satisfying  $|w - 2 - i| < 3$ . Then,  $|z| - |w| + 3$  lies between (2008)

(a) -6 and 3 (b) -3 and 6

(c) -6 and 6 (d) -3 and 9