

If $\omega (\neq 1)$ be a cube root of unity and $(1 + \omega^2)^n = (1 + \omega^4)^n$, then the least positive value of n is

(A) 2

(B) 3

(C) 5

(D) 6

Correct option (B) 3

Explanation:

$$\text{Given, } (1 + \omega^2)^n = (1 + \omega^4)^n$$

$$\Rightarrow (-\omega)^n = (-\omega^2)^n$$

$$(\because \omega^3 = 1 \text{ and } 1 + \omega + \omega^2 = 0)$$

$$\Rightarrow \omega^n = 1$$

$\Rightarrow n = 3$ is the least positive value of n .