If α and β be the roots of the equation $x^2 - 2x + 2 = 0$, then the least value of n for which $\left(\frac{\alpha}{\beta}\right)^n = 1$ is :

(1) 2 (2) 5 (3) 4 (4) 3

(3) The given quadratic equation is $x^2 - 2x + 2 = 0$

Then, the roots of the this equation are $\frac{2 \pm \sqrt{-4}}{2} = 1 \pm i$

Now, $\frac{\alpha}{\beta} = \frac{1-i}{1+i} = \frac{(1-i)^2}{1-i^2} = i$

or $\frac{\alpha}{\beta} = \frac{1-i}{1+i} = \frac{(1-i)^2}{1-i^2} = i$

So, $\frac{\alpha}{\beta} = \pm i$

Now, $\left(\frac{\alpha}{\beta}\right)^n = 1 \Rightarrow (\pm \text{i})^n = 1$

$\Rightarrow$ n must be a multiple of 4.

Hence, the required least value of $n = 4$.