Q. (5). Let $0^\circ < \theta < 45^\circ$, $t_1 = (\tan\theta)^{\tan\theta}$, $t_2 = (\tan\theta)^{\cot\theta}$, $t_3 = (\cot\theta)^{\tan\theta}$, $t_4 = (\cot\theta)^{\cot\theta}$. then -

A - $t_1 < t_2 < t_3 < t_4$

B - $t_4 > t_3 > t_1 > t_2$

C - $t_4 > t_1 > t_2 > t_3$

D - None of these

Ans: (B).

$0 < \tan\theta < 1 < \cot\theta$.

Since, $\cot\theta > \tan\theta$.

$(\cot\theta)^{\tan\theta} > (\tan\theta)^{\tan\theta}$.

$\therefore \quad t_3 > t_1$

Again. $\cot\theta > 1$

So. $(\cot\theta)^{\cot\theta} > (\cot\theta)^{\tan\theta} \Rightarrow t_4 > t_3$

But, $0 < \tan\theta < 1$

So: $(\tan\theta)^{\tan\theta} > (\tan\theta)^{\cot\theta} \Rightarrow t_1 > t_2$

So $t_4 > t_3 > t_1 > t_2$