Abstract. Trees possessing no Kekulé structures (i.e., perfect matching) with the minimal Estrada index are considered. Let $T_n$ be the set of the trees having no perfect matchings with $n$ vertices. When $n$ is odd and $n \geq 5$, the trees with the smallest and the second smallest Estrada indices among $T_n$ are obtained. When $n$ is even and $n \geq 6$, the tree with the smallest Estrada index in $T_n$ is deduced.

Key words. Estrada indices, Perfect matching, Trees.

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