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A simple graph G with maximum degree Δ is class one if it is edge Δ -colorable. Otherwise it is class two. A graph G is edge chromatic critical (or simply critical) if it is class two and $G - e$ is class one for each edge e . In 1960s, Vizing proposed the following two conjectures on critical graphs:

(1) (Vizing's Independence Number Conjecture) The independence number of a critical graph is at most half of its number of vertices.

(2) (Vizing's 2-Factor Conjecture) Every critical graph has a 2-factor.

We prove the following two results:

(a) The independence number of a critical graph G with maximum degree Δ is less than $\frac{5\Delta-6}{8\Delta-6}|V(G)|$.

(b) Every critical graph with maximum degree $\Delta \geq \frac{6}{7}|V(G)|$ is hamiltonian and thus has a 2-factor.

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