Combinatorial Optimization
Winter term 2010/2011

Prof. Dr. Stefan Hougardy
Markus Struzyna

Exercises 5

Exercise 1:
Show: the number of ears in any two odd ear-decompositions of a factor-critical graph G is the same.

(4 points)

Exercise 2:
Prove that a minimal factor-critical graph G has at most $\frac{3}{2}(|V(G)| - 1)$ edges and this bound is tight.

(4 points)

Exercise 3:
Let G be a graph, M a maximum matching in G and F as well as F' two special blossom forests w.r.t M, each with the maximum possible number of edges. Show that the set of **inner** vertices in F and F' is the same.

(4 points)

Exercise 4:
Let G be a $k-$connected graph with $2\nu(G) < |V(G)| - 1$. Prove:

a. $\nu(G) \geq k$,

b. $\tau(G) \leq 2\nu(G) - k$.

(Use the Gallai-Edmonds Theorem)

(4 points)

Deadline: Tuesday, November 16th, before the lecture.