**CORSO DI ALGORITMICA**

ESONERO DEL 28/ 04 /2017

1. Prove or disprove the following assertion: for each matching M, it exists a maximum matching M’, such that M’⊇ M .
2. Let G(XUY,E) a bipartite graph. Describe an efficient algorithm to find a minimum set of edges such that each vertex is at the extremes of at least one edge of the set. Prove the correctness of the algorithm and calculate its complexity.
3. Prove or disprove the following assertion: if all capacities in a network are distinct, then there exists a unique flow function that gives the maximum flow.
4. Give an efficient algorithm to find a path of maximum bottleneck capacity in a given directed acyclic graph.
5. Petersen’s graph is not planar. Apply the algorithm for drawing planar graphs to the Petersen graph and show where the algorithm fails and recognizes non planarity.

