Tutorial 4
Advanced Graph Theory

August 13, 2013

1. Given a graph G with distinct edge costs, how many minimum cost spanning trees exist in G?
2. Arrange seven 0's and seven 1's cyclically so that the 14 strings of four consecutive bits are all the 4-digit binary strings other than 0101 and 1010.
3. De Bruijn cycle for any alphabet and length. Let A be an alphabet of size k. Prove that there exists an cyclic arrangement of k^l characters chosen from A such that the k^l strings of length l in the sequence are all distinct. (Good[1946], Rees[1946])

4. Let v be a vertex in a connected graph G. Prove that there exists a spanning tree T of G such that the distance of every vertex from v is the same in G and in T.
5. Let T be a tree of order n. Prove that T is isomorphic to a subgraph of C'_{n+2} (complement of C_{n+2}).