GRAPH THEORY

Tutorial – 3

1) For $n \geq 4$, prove that the minimum number of edges in an n-vertex graph with diameter 2 and maximum degree (n-2) is (2n-4).

2) Prove or disprove: Every tree has at most one perfect matching.

3) Prove that every maximal matching in a graph G has at least $\alpha'(G)/2$ edges.

4) Suppose that G is a graph and D is an orientation of G that is strongly connected. Prove that if G has an odd cycle, then D has an odd cycle.