

A Generalization of a Theorem of Chartrand

F. T. Boesch, L.W. Kazmierczak, C. Suffel*, A. Suhartomo
Stevens Institute of Technology
and
D. Gross
Seton Hall University

The edge connectivity of a graph measures the vulnerability of a connected graph to disconnection upon the failure of a set of lines but it does not account for the possibility that the surviving subgraph may contain a large component. On the other hand, the k -component edge connectivity is the minimum size of a set of edges which, upon failure, leaves a surviving subgraph with all components having order smaller than k , a preassigned threshold. Of course if k equals the order of the graph then the k -component edge connectivity equals the edge connectivity. Chartrand proved that if the minimum degree is at least the floor of half the number of nodes then the edge connectivity equals the minimum degree. We generalize this result to k -component edge connectivity.