Laurene V. Fausett* (LFausett@GeorgiaSouthern.edu), Department of Mathematical Sciences, Georgia Southern University, Statesboro, GA 30458, and Kanuri N. Murty and Gulcin Tugcu. Controllability and Observability of Difference Equations.

In this paper we present some basic results concerning the relation between the k-th order difference equation and the companion matrix equation. We also establish a necessary and sufficient condition for the equivalence of the general first-order non-homogeneous equation to the k-th order scalar non-homogeneous equation. We then give a set of necessary and sufficient conditions for the complete controllability and observability of the general first-order difference system. (Received October 04, 2004)