**STUDIES ON CONTROLLABILITY OF NONLINEAR NEUTRAL IMPULSIVE INTEGRODIFFERENTIAL EVOLUTION SYSTEMS IN BANACH SPACES**

**Abstract**

The research reported in this thesis deals with the controllability of nonlinear neutral impulsive integrodifferential evolution systems in Banach spaces. Several sufficient conditions are established for the controllability of such systems. Also we study the controllability of semilinear integrodifferential evolution systems with nonlocal conditions using Hausdorff measure of noncompactness and operator semigroups, in particular, by dropping the compactness assumption. We address the problem of controllability for impulsive neutral functional integrodifferential systems with infinite delay. The results are obtained by using the Schauder's fixed point theorem. Moreover we study the controllability of impulsive neutral integrodifferential systems with time varying delay by using the Schaefer's fixed point theorem. The same problem is studied for impulsive neutral integrodifferential systems with state dependent delay. The results are obtained by using the theory of resolvent operators and the Sadovskii's fixed point theorem. Further we study the controllability results for second-order neutral integrodifferential systems and also for the nonlinear fractional integrodifferential systems by using the Banach fixed point theorem. All the results generalize the previous results of several researchers. Examples are provided to illustrate the theory.