

ABSTRACT

Generalized metric spaces were originalited in two different ways; one, from the process of metrization of topological spaces ,secondly, from generalizing the axioms of metric spaces (by deleting or by replacing suitable axioms).

There have been a number of generalizations of metric spaces ([2],[3]). One such generalization is D-metric spaces introduced by B.C Dhage [4] in 1992 for the sake of generalizing a few results of fixed point theory, satisfying a contractive type condition. Rhoades [6] generalized Dhage's contractive condition and obtained some fixed point theorems in setting of D-metric spaces. Bijendra Singh [8] proved some fixed point theorems for semi-compatible mappings in D-metric spaces .Unfortunately, the topological aspects are ignored by these researchers.

In this dissertation, we discuss the notion of D-metric spaces and its topological aspects, regarding separation axioms, regularity and normality by using Archimedean property of real numbers. We discuss the convergence of a sequence and continuity of a function in D-metric spaces. We introduce a general contraction and expansion mapping in D-metric spaces. In this connection we establish some fixed point theorem in D-metric spaces. We establish more general fixed point theorems for semi-compatible mappings satisfying general contraction condition in D-metric spaces.