CHAPTER I

INTRODUCTION

A well-known theorem on fixed points of mappings is the Banach's contraction theorem. This theorem states that if a mapping T on a complete metric space (E, d) into itself is contractive, i.e. there exists a real number $\alpha \in [0, 1)$ such that

$$d(T(x), T(y)) \leqslant \alpha\, d(x, y)$$

for all $x, y \in E$, then there exists a unique $x_o \in E$ such that

$$T(x_o) = x_o$$

In this study we shall extend this theorem to the following cases :

(1) T is a uniformly locally contractive map.

(2) (E, d) is a complete generalized metric space.

Chapter II deals with definitions and some important theorems of mathematical analysis needed in our study. In chapter III we prove the Banach's contraction theorem with a more general setting. We illustrate some applications of this theorem in chapter IV. Chapter V and VI deal with the above case (1) and (2) respectively.