

Preface

This book is a monograph of a significant and recent publications in non-linear analysis involving set-valued mappings. A map $T : X \rightarrow 2^Y$ is said to be a set-valued mapping if for each $x \in X$, $T(x) \subset Y$.

We need analysis, topology and geometry, i.e., a mixture of these three fields, in studying the theory of set-valued mappings. There have been a significant number of publications in this area of research over the last 40 years. These have become possible because there are huge applications in the fields of Physics, Biology, Control Theory, Optimization, Economics and Game Theory.

We shall cover the following topics in this book: contraction mappings, fixed point theorems, minimax inequalities, end points, variational inequalities, generalized variational inequalities, and generalized quasi-variational inequalities, equilibrium analysis in economics, best approximation and fixed point theorems, topological degree theory, and non-expansive types of mappings and fixed point theorems.

In Chapter 5, we shall present variational inequalities, quasi-variational equalities and equilibrium analysis in economics. We have applied the topological methods to study the equilibrium analysis in economics. We shall discuss them in more details in the Introduction Chapter. In Chapter 6, we shall discuss best approximation and fixed point theorems for set-valued mappings in topological vector spaces. Finally, in Chapters 7 and 8 we shall present some aspects of degree theories for set-valued mappings and non-expansive types of mappings and fixed point theorems in locally convex topological vector spaces.

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