

# Contents

<b>1</b>	<b>Introduction</b>	<b>6</b>
<b>2</b>	<b>Preliminaries</b>	<b>9</b>
2.1	Metric spaces . . . . .	9
2.2	Vector spaces . . . . .	12
2.3	Contraction mappings . . . . .	14
2.3.1	The contraction mapping principle . . . . .	17
2.3.2	Set-valued (Multivalued) contraction mappings . . . . .	19
2.3.3	Generalized contraction mappings . . . . .	23
2.3.4	I-contraction mappings . . . . .	24
2.3.5	Generalized I-contraction mappings . . . . .	27
2.4	Nonexpansive mappings . . . . .	28
2.4.1	Nonexpansive Mappings . . . . .	29
2.4.2	Set-valued (Multivalued) nonexpansive mappings . . . . .	30
2.4.3	I-nonexpansive mappings . . . . .	32
2.5	Random coincidence and common random fixed points . . . . .	33
<b>3</b>	<b>Main results</b>	<b>37</b>
3.1	Deterministic coincidence and common fixed points . . . . .	38

3.1.1	Coincidence and common fixed points for generalized $I$ -contraction mappings . . . . .	38
3.1.2	Coincidence and common fixed points for generalized $I$ -nonexpansive mappings . . . . .	45
3.1.3	Invariant approximations . . . . .	48
3.2	Random coincidence and common random fixed points . . . . .	52
3.2.1	Random coincidence points . . . . .	52
3.2.2	Common random fixed points . . . . .	53
<b>4</b>	<b>Conclusion</b>	<b>55</b>