TABLE OF CONTENTS

CHAPTER NO		TITLE	PAGE NO
		Declaration	ii
		Certificate	iii
		Acknowledgement	iv
		Abstract	v
		List of Tables	xiii
		List of Figures	xvi
		List of Abbreviations	xix
CHAPTER	**1**	**INTRODUCTION**	1
	1.1	History of Geopolymer	
	1.2	Problem Statement	
	1.3	Low Calcium Fly Ash Based Geopolymer Concrete	
	1.4	Research Significance	
	1.5	Motivation for Research	
	1.6	Objective of the Research	
	1.7	Organisation of the Thesis	
CHAPTER	**2**	**LITERATURE REVIEW**	6
	2.1	Introduction	
	2.2	Environmental Issues	
	2.3	Fly ash	
	2.4	Uses of Fly ash in Concrete	
	2.5	Geopolymer	
	2.6	Source Material and Alkaline Liquid	
	2.7	Durability of Geopolymer Concrete	
		2.7.1 Acid Resistance	

CHAPTER NO		TITLE	PAGE NO
		2.7.2 Water Permeability	
	2.8	Geopolymer Concrete Brick Prism	
	2.9	Inference from Literature Study	
	2.10	Scope of the Research	
CHAPTER	**3**	**EXPERIMENTAL PROGRAMME**	29
	3.1	General	
	3.2	Materials	
		3.2.1 Fly ash	
		3.2.2 Alkaline Activators	
		3.2.3 Aggregates	
		3.2.3.1 Fine Aggregate	
		3.2.3.2 Coarse Aggregate	
	3.3	Preliminary Laboratory Work	
		3.3.1 Mixing	
		3.3.2 Curing	
	3.4	Mix Proportion	
		3.4.1 Mix Proportion for Geopolymer Concrete Block	
		3.4.2 Mix Proportion for Geopolymer Brick	
	3.5	Summary	
CHAPTER	**4**	**METHODOLOGY**	41
	4.1	Introduction	
		4.1.1 Compressive Strength Test	
		4.1.2 Split Tensile Strength Test	
		4.1.3 Flexural Strength Test	
	4.2	Water Absorption Studies on Geopolymer Concrete	

CHAPTER NO		TITLE	PAGE NO
	4.3	Resistance of Fly ash Based Geopolymer Concrete Block to Sulphuric Acid	
		4.3.1 Change in Weight	
		4.3.2 Residual Compressive Strength and Split Tensile Strength	
		4.3.3 pH Value of Solution	
	4.4	Behaviour of Unreinforced Geopolymer Brick Prism	
	4.5	Preparation of Test Specimens	
	4.6	Summary	
CHAPTER	**5**	**RESULTS AND DISCUSSION**	59
	5.1	Introduction	
	5.2	Workability of Concrete	
	5.3	Mechanical Property	
		5.3.1 Compressive Strength of GPC Solid Block	
		5.3.2 Split Tensile Strength of GPC Solid Block	
		5.3.3 Flexural Strength of GPC Solid Block	
		5.3.4 Compressive Strength of GPC Hollow Block	
		5.3.5 Split Tensile Strength of GPC Hollow Block	
	5.4	Water Absorption of Geopolymer Concrete	
	5.5	Resistance of Fly ash Based Geopolymer Concrete to Sulphuric Acid	
		5.5.1 Visual Inspection	
		5.5.2 Change in Weight	
		5.5.3 Residual Compressive Strength	

CHAPTER NO	TITLE	PAGE NO
	5.5.4 Residual Split Tensile Strength	
	5.5.5 pH Value of Solution	
	5.6 Behaviour of Unreinforced Geopolymer Brick Masonry Prism	
	5.6.1 Clay Brick Prism	
	5.6.2 Geopolymer Brick Prism GBP (M1)	
	5.6.3 Geopolymer Brick Prism GBP (M2)	
	5.7 Comparison of Axial Strength of Brick Masonry Prism	
	5.8 Regression Analysis	
	5.8.1 Regression Analysis for Clay Brick Prism CBP	
	5.8.2 Regression Analysis for Geopolymer Brick Prism GBP (M1)	
	5.8.3 Regression Analysis for Geopolymer Brick Prism GBP (M2)	
	5.9 Validation Using Chi Square Test	
	5.9.1 Validation for Clay Brick Prism	
	5.9.2 Validation for Geopolymer Brick Prism GBP (M1)	
	5.9.3 Validation for Geopolymer Brick Prism GBP (M2)	
	5.9.4 Homogenized Elastic Modulus of Masonry Prism	
	5.10 Comparison of Experimental Results with Published Data	
	5.11 Summary	
CHAPTER 6	**CONCLUSION**	115
	6.1 General	
	6.2 Summary	

CHAPTER NO	TITLE	PAGE NO
	6.3 Specific Conclusion	
	6.3.1 Mechanical Property of Geopolymer Solid and Hollow Block	
	6.3.2 Water Absorption of Geopolymer Concrete	
	6.3.3 Acid Resistance of Geopolymer Concrete to Sulphuric Acid	
	6.3.4 Behaviour of Unreinforced Geopolymer Brick Masonry Prism	
	6.4 Limitation of Study	
	6.5 Future Scope of Research	
	APPENDIX 1	
	REFERENCES	
	LIST OF PUBLICATIONS	