CONTENTS

LIST OF FIGURES	vi
LIST OF TABLES	x
ACRONYMS	xii
INDEX	
CHAPTER 1	1-14
INTRODUCTION	1
1.1 CLASSIFICATIONS OF STORAGE SYSTEMS	2
1.2. SIGNIFICANCE OF THE RESEARCH	8
1.3. MOTIVATION	8
1.4. THE EMERGING AREA OF ELECTRICAL VEHICLE	
& ITS RESEARCH AREA	9
1.5. RESEARCH SCOPE	11
1.6. PROBLEM SCOPE	13
CHAPTER 2	15-32
LITERATURE REVIEW	15
2.1 OVERVIEW	16
2.2 MULTIPLE ENERGY STORAGE SYSTEMS IN AN EV	17

2.3 POWER & ENERGY MANAGEMENT OF MULTIPLE	
ENERGY STORAGE SYSTEMS	18
2.4 EV ENABLING TECHNOLOGY – THE SUPERCAPACITOR	20
2.5 HYBRIDIZATION OF BATTERIES AND SUPERCAPACITORS	
IN EV POWER SYSTYMS	23
2.6 TYPES OF CONFIGURATIONS	27
CHAPTER 3	33-48
ENERGY MANAGEMENT & ITS ESTIMATION	
IN ELECTRIC VEHICLE	33
3.1FORCE MODEL	34
3.2 DRIVING CYCLES	42
3.3 AUXILIARY LOAD	43
3.4 TRANSMISSION	44
3.5 POWER ESTIMATION	45
CHAPTER 4	49-77
DESIGN OF HYBRID STORAGE SYSTEM	49
4.1 EV BATTERY SYSTEM	50
4.2 BATTERY MODELING	55
4.3 SUPER CAPACITOR	58
4.4 SUPERCAPACITOR MODELING	60

4.5 PARAMETER SELECTION OF BATTERY AND SUPERCAPACITOR	63
4.6 CONVERTER DESIGN	70
CHAPTER 5	76-99
SIMULATIONS & RESULTS	76
5.1 BASE CIRCUIT	77
5.2 FINAL CIRCUIT	81
5.3 CIRCUIT DESCRIPTION	87
5.4 RESULTS	93
CHAPTER 6	98-137
EVIDENCE THEORY	98
THEORY	99
6.1 INTRODUCTION	99
6.2 OVERVIEW OF DST	100
6.3 METHODOLOGY BASED ON DST	101
6.4 DEMPSTER'S RULE OF COMBINATION	103
6.5 BAYESIAN THEORY AS A SPECIAL CASE	104
PRACTICAL WORK	107
6.6 OBSERVATIONS – DATA COLLECTION	107

108

6.7 MATHEMATICAL CALCULATIONS

6.8 GRAPHS FOR CORRELATION	112
6.9 PROPOSED SCHEME OF HSS WITH DST PROGRAMMER	112
6.10 FACTORS CONSIDERED FOR DST PROGRAMMER	117
6.11 TYPES OF SERVICES	121
6.12 SPACE MANAGEMENT FOR BATTERY AND	
SUPERCAPACITORS IN E-BUS	126
6.13 BRTS BUS SURVEY	128
6.14 CENTRE OF GRAVITY	131
6.15 EFFICIENCY OF BATTERY-SUPERCAPACITOR SYSTEM	135
6.16 HARDWARE TESTING & RESULTS	137
CHA DEED #	120 142
CHAPTER 7	138-142
CHAPTER 7 CONCLUSION & FUTURE SCOPE	138-142
CONCLUSION & FUTURE SCOPE	138
CONCLUSION & FUTURE SCOPE 7.1 CONCLUSION	138 139
CONCLUSION & FUTURE SCOPE 7.1 CONCLUSION 7.2 FUTURE SCOPE	138 139 142
CONCLUSION & FUTURE SCOPE 7.1 CONCLUSION 7.2 FUTURE SCOPE CHAPTER 8	138 139 142 143-159
CONCLUSION & FUTURE SCOPE 7.1 CONCLUSION 7.2 FUTURE SCOPE CHAPTER 8 BIBLIOGRAPHY	138 139 142 143-159

APPENDIX D

APPENDIX E

APPENDIX F

APPENDIX G