

TABLE OF CONTENTS

COVER PAGE	i
LETTER OF APPROVAL	ii
PLAGIARISM FREE STATEMENT	iii
NASKAH SOAL TUGAS AKHIR	iv
ACKNOWLEDGMENT	v
TABLE OF CONTENTS	vii
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF APPENDICES	xi
LIST OF NOTATIONS AND ABBREVIATIONS	xii
ABSTRACT	xiii
CHAPTER I INTRODUCTION	1
1.1 Problem Identification	1
1.2 Problem Formulation	3
1.3 Problem Scopes	3
1.4 Research Objectives	3
1.5 Research Benefit	4
CHAPTER II LITERATURE REVIEW	5
CHAPTER III THEORETICAL BACKGROUND	10
3.1 Humanitarian Logistics	10
3.2 Drone for Disaster Response and Relief Operation	10
3.3 Ground Vehicle and Unmanned Aerial Vehicle	11
3.4 Depth First Search for Routing Problem	12
3.5 Verification Method	13
3.6 The 2010 Merapi Eruption; an Introduction	13
CHAPTER IV RESEARCH METHOD	14
4.1 Research Object	14
4.2 Tools and Material	14

4.3 Method Stages	15
CHAPTER V RESULT AND DISCUSSION	18
5.1 System Characterization	18
5.2 Mathematical Model Formulation	20
5.2.1 Notation	20
5.2.2 Decision Variable	21
5.2.3 Objective Function	21
5.2.4 Constraints	21
5.3 Algorithm for Cooperated UAV and GV Route	25
5.3.1 Algorithm for UAV Path	25
5.3.2 Algorithm for GV Path	27
5.4 Verification with Small Scale Case	28
5.5 The 2010 Merapi Eruption Case	33
CHAPTER VI CONCLUSION AND RECOMMENDATION	43
6.1 Conclusion	43
6.2 Recommendation	44
REFERENCES	45
APPENDICES	48