TABLE OF CONTENTS

COVER i
AUTHENTICITY STATEMENT ii
THESIS PROPOSAL OF SUPERVISOR iii
THESIS APPROVAL OF EXAMINATION COMMITTEE iv
DEDICATION v
MOTTO vi
PREFACE vii
ABSTRACT ix
TABLE OF CONTENTS x
LIST OF TABLES xii
LIST OF FIGURES xiii
CHAPTER I 1
1.1. Background 1
1.2. Problem Formulation 4
1.3. Research Objectives 4
1.4. Significant of Research 4
1.5. Limitation of Research 5
1.6. Organization of Thesis 5
CHAPTER II 6
2.1. Inductive Study 6
2.2. Deductive Study 10
2.2.1 Maintenance Scheduling 10
2.2.2 Genetic Algorithm 12
2.2.3 Genetic Algorithm for Optimization of Maintenance Scheduling 14
2.2.4 Asset Management 14
2.2.5 Engineering Asset Management 17
CHAPTER III 18
3.1. Research Subject 18
3.2. Problem Identification 18
3.3. Research Flowchart 18
3.4. Data Collection Method 20

3.5. Data Processing and Analysis 20
3.6. Result Analysis 22
3.7. Conclusion and Recommendation 23
CHAPTER IV 24
4.1 Data Collection 24
4.1.1 Company's Maintenance Strategy 24
4.1.2 Initial Maintenance Scheduling 25
4.1.3 Cost of Manpower for Maintenance 27
4.2 Data Processing 27
4.2.1 Genetic Algorithm 27
4.2.2 Fitness Value 28
4.2.3 Maintenance Scheduling Suggestion 29
CHAPTER V 33
5.1 Define the Number of Generation 33
5.2 Maintenance Scheduling Suggestion by Genetic Algorithm 33
5.3 Comparison Penalty of Initial and Suggestion Scheduling 35
5.4 Implementation of Suggestion Maintenance Scheduling 37
5.5 Maintenance Scheduling Sequence 38
CHAPTER VI 40
6.1. Conclusion 40
6.2. Recommendation 40
REFERENCE 42
APPENDIX 44

LIST OF TABLES

Table 3. 1 Penalty Formula 22
Table 4. 1 Initial Maintenance Scheduling 25
Table 4. 2 Cost Manpower 27
Table 4. 3 Initial Chromosome 28
Table 4. 4 Maintenance scheduling suggestion 29
Table 4. 5 Cost estimation with suggestion schedule 31
Table 5. 1 Initial Scheduling Penalty Score 34
Table 5. 2 Penalty Comparison 35
Table 5. 3 Allocation of work every month 36

LIST OF FIGURES

Figure 2. 1 Genetic algorithm process flowchart 13

Figure 2.2 Asset Life Cycle…… ……..15

Figure 3. 1 Research Flowchart 19

Figure 4. 1 History of fitness value…… 25