

TABLE OF CONTENTS

APPROVAL SHEET	i
INTELLECTUAL PROPERTY STATEMENT FORM	ii
ABSTRACT.....	iii
ABSTRAK.....	iv
PREFACE	v
ACKNOWLEDGMENT.....	vi
TABLE OF CONTENTS.....	viii
TABLE OF FIGURES	xi
LIST OF TABLE	xii
SYMBOL.....	xiii
TERMINOLOGY	xiv
LIST OF APPENDIX	xv
CHAPTER I INTRODUCTION.....	1
I.1 Research Background	1
I.2 Problem Statements	7
I.3 Research Objectives.....	7
I.4 Research Boundaries.....	7
I.5 Research Benefits.....	8
I.6 Writing Systematics	8
CHAPTER II LITERATURE REVIEW	10
II.1 Scheduling.....	10
II.1.1 Scheduling Objectives	10
II.1.2 Type of Scheduling	10
II.1.3 Variabel of Scheduling	11
II.1.4 Parameter of Scheduling	13
II.1.5 Output of Scheduling	14
II.2 Optimization Algorithms	14
II.2.1 Analysis of Election Method	15
II.2.2 Genetic Algorithm	17
II.2.3 Procedure of Genetic Algorithm.....	17
II.2.4 Advantages of Genetic Algorithm	19
II.2.5 Genetic Algorithm in Matlab	19
II.3 Previous Study	20
II.3.1 Previous Study 1	20
II.3.2 Previous Study 2	21

CHAPTER III RESEARCH METHOD	22
III.1 Conceptual Model	22
III.2 Problem Solving Systematic	23
III.2.1 Data Collecting Phase	23
III.2.2 Data Processing Phase	24
III.2.3 Analysis Phase	24
III.2.4 Conclusions and Suggestions	24
CHAPTER IV COLLECTING AND DATA PROCESSING	25
IV.1 Data Existing	25
IV.1.1 Job Symbolization	26
IV.1.2 Machine or Workcenter Symbolization	26
IV.1.3 Data of Processing Time and Sequence of Job on Machine or Workcenter (Routing Job)	27
IV.2 Data Processing	30
IV.3 Optimization of Job Shop Scheduling using Genetic Algorithm	31
IV.3.1 Generate Initial Population	32
IV.3.2 Fitness Evaluation	32
IV.3.3 Selection	33
IV.3.4 Crossover	33
IV.3.5 Mutation	33
IV.3.6 Termination	34
IV.3.7 Result	34
CHAPTER V ANALYSIS	36
V.1 Existing Scheduling Analysis	36
V.2 Experiment Analysis	36
V.3 Analysis of Existing and Proposed Scheduling	38
CHAPTER VI CONCLUSIONS AND SUGGESTIONS	40
VI.1 Conclusions	40
VI.2 Suggestions	41
REFERENCES	42
APPENDIX	43
APPENDIX A Root Cause	44
APPENDIX B Demand Come on September 11 st 2015	45
APPENDIX C Gantt Chart of Existing Scheduling	46
APPENDIX D Gantt Chart of Proposed Scheduling	57
APPENDIX E Graphic of Fitness Value in Experiments	66
APPENDIX F Main Program	76

APPENDIX G Roulette Wheel Program	79
APPENDIX H Fitness Program	79
APPENDIX I Convert Program	80
APPENDIX J Mutation Program	80
APPENDIX K Crossover Program	80