

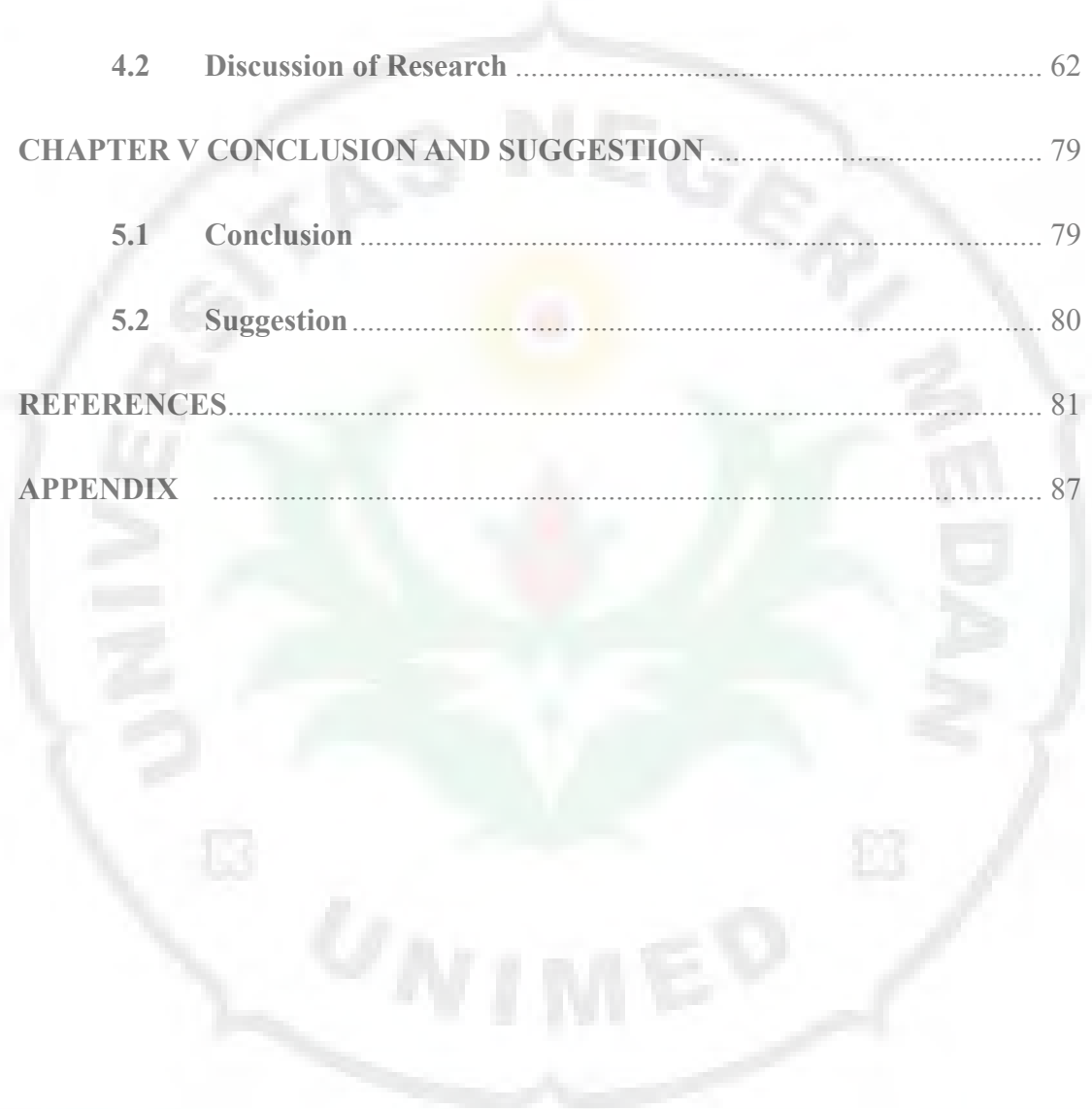
TABLE OF CONTENTS

	<i>Pages</i>
Validity Sheet.....	<i>i</i>
Originality Statement Page	<i>ii</i>
Approval Page For Publication of Final Thesis For Academic Purposes	<i>iii</i>
Author's Curriculum Vitae.....	<i>iv</i>
Abstract	<i>v</i>
Preface	<i>vi</i>
Table of Contents	<i>x</i>
List of Figures.....	<i>iv</i>
List of Tables	<i>vi</i>
List of Appendixs	<i>vii</i>
CHAPTER I INTRODUCTION	1
1.1 Background	1
1.2 Problem Identification	6
1.3 Scope of Study	6
1.4 Problem Limitations	7
1.5 Problem Formulation	7
1.6 Research Objectives	8
1.7 Research Benefits	8

CHAPTER II LITERATURE REVIEW	10
2.1 Theoretical Framework	10
2.1.1 Concept	10
2.1.2 Misconceptions	11
2.1.3 Misconceptions on Reaction Rate	14
2.1.4 Diagnostic Test	15
2.1.5 An Online-Based Diagnostic Test	18
2.1.6 Independent Curriculum	18
2.1.7 Reaction Rate	19
2.1.7.1 Collision Theory	20
2.1.7.2 Concepts Reaction Rate	20
2.1.7.3 Reaction Rate Equilibrium	22
2.1.7.4 Factors Affecting the Reaction Rate	25
2.2 Thinking Framework	27
CHAPTER III RESEARCH METHODS	30
3.1 Location and Time of Research	30
3.2 Type of Research	30
3.3 Population and Sample of Research	31
3.4 Variable of Research	32
3.5 Operational Definition	32

3.6	Research Design	32
3.7	Data Collection Techniques.....	33
3.8	Research Instruments.....	34
3.9	Research Procedure	35
3.9.1	Analysis.....	36
3.9.2	Design.....	37
3.9.3	Preparation.....	38
3.10	Data Analysis	40
3.10.1	Expert Validity Test	41
3.10.2	Quantitative Analysis of Test Instrument.....	41
3.10.3	Misconceptions Analysis of Test Instrument	46
CHAPTER IV RESULT AND DISCUSSION		49
4.1	Result of Research.....	49
4.1.1	Analysis of Expert Validity Test Data	49
4.1.2	Quantitative Analysis of Test Instrument Data.....	51
4.1.2.1	Validity of Five-Tier Diagnostic Test.....	51
4.1.2.2	Reliability of Five-Tier Diagnostic Test.....	52
4.1.2.3	Difficulty Level of Five-Tier Diagnostic Test.....	52
4.1.2.4	Discriminatory Power of Five-Tier Diagnostic Test..	53
4.1.2.5	Distractor of Five-Tier Diagnostic Test.....	55

4.1.3	Misconceptions Analysis of Test Instrument Data	56
4.2	Discussion of Research	62
CHAPTER V CONCLUSION AND SUGGESTION		79
5.1	Conclusion	79
5.2	Suggestion	80
REFERENCES		81
APPENDIX		87



THE
Character Building
 UNIVERSITY

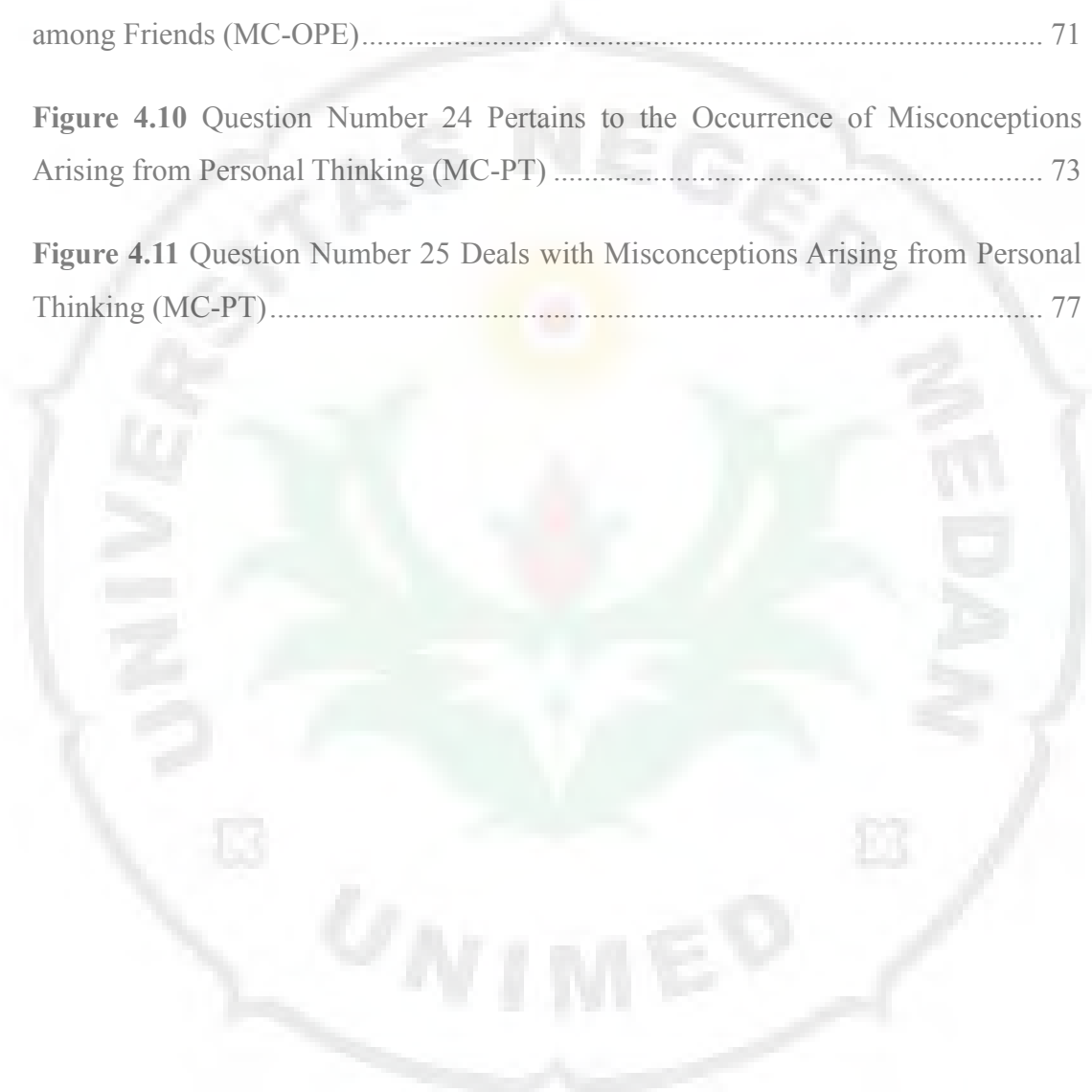
LIST OF FIGURES

	<i>Pages</i>
Figure 2.1 Graphic of relationship between activation energy and the energy absorbed or released during a chemical reaction	20
Figure 2.2 Graphic of relationship concentration with times against reagents and products	21
Figure 2.3 Graphic of zero order reaction.....	23
Figure 2.4 Graphic of first order reaction	24
Figure 2.5 Graphic of second order reaction.....	24
Figure 2.6 Activation energy graph without catalyst (black curve) and with catalyst (blue curve)	27
Figure 2.7 Flow Chart of Research Thinking Framework.....	29
Figure 3.1 Flow Chart of The Research Procedures	40
Figure 4.1 Analysis of The Difficulty Level of The Five-Tier Diagnostic Test.....	53
Figure 4.2 Analysis of the Discriminatory Power of the Five-Tier Diagnostic Test.	54
Figure 4.3 Analysis of the Distractor of Five-Tier Diagnostic Tests	55
Figure 4.4 Percentage of Each Category of Students' Conceptual	58
Figure 4.5 Percentage of Misconceptions Per Question Item.....	58
Figure 4.6 Percentage of Misconceptions on Each Sub Material	60
Figure 4.7 Question Number 2 Takes Misconceptions from Book (MC-B).....	66
Figure 4.8 Question Number 12 Pertains to the Presence of Misconceptions from the Book (MC-B)	69

Figure 4.9 Question Number 13 is Concerned with the Presence of Misconceptions among Friends (MC-OPE)..... 71

Figure 4.10 Question Number 24 Pertains to the Occurrence of Misconceptions Arising from Personal Thinking (MC-PT) 73

Figure 4.11 Question Number 25 Deals with Misconceptions Arising from Personal Thinking (MC-PT)..... 77



THE
Character Building
UNIVERSITY

LIST OF TABLES

	<i>Pages</i>
Table 2.1 Students' Misconceptions on Reaction Rate	14
Table 3.1 Validation Sheet Statement Grid (Fathonah, 2022).....	35
Table 3.2 Grid the Indicators of Achievement Test Instrument.....	37
Table 3.3 Validation Sheet Assessment Criteria	41
Table 3.4 Reliability Test Criteria	43
Table 3.5 Criteria of Difficulty Tier Test.....	43
Table 3.6 Discriminating Power Criteria.....	45
Table 3.7 Interpretation of the Five Tier Diagnostic Test (Kaniawati et al., 2019)...	47
Table 3.8 Category of Percentage of Misconception Rate	48
Table 4.1 Classification of Cognitive Level of Questions	50
Table 4.2 Result of Analysis Validity Five-Tier Test Diagnostic	51
Table 4.3 Results of the Analysis Difficulty Level of Five-Tier Diagnostic Test	53
Table 4.4 Results of the Analysis of the Discriminatory Power of the Five-Tier Diagnostic Test.....	54
Table 4.5 Five-Tier Diagnostic Test Items in the Large-Scale Trial	56
Table 4.6 Percentage of Each Category of Overall Question Items.....	57
Table 4.7 Percentages of Each Category of Students' Conceptual Understanding Level on Each the Reaction Rate Concepts	59
Table 4.8 Percentages of Misconceptions Category Each Source's Misconceptions	61

LIST OF APPENDIXS

	<i>Pages</i>
Appendix 1 Teacher Interview Sheet	87
Appendix 2 High School Chemistry Learning Objectives Flow	89
Appendix 3 Grid the Indicators of Achievement Test Instrument Before Validation	98
Appendix 4 Grid of Five-Tier Diagnostic Test Instrument on Reaction Rate Material Before Validation	99
Appendix 5 Grid the Indicators of Achievement Test Instrument After Validation	123
Appendix 6 Grid of Five-Tier Diagnostic Test Instrument on Reaction Rate Material After Validation.....	124
Appendix 7 Five-Level Diagnostic Test Assisted by Microsoft Form.....	141
Appendix 8 Instrument Validation Sheet	144
Appendix 9 Recapitulation of Expert's Scoring Validation Sheet	155
Appendix 10 Recapitulation Suggestion of Expert's Scoring Instrument Tests	156
Appendix 11 Analysis Validation	159
Appendix 12 Analysis Reliability	161
Appendix 13 Analysis Difficulty Power	163
Appendix 14 Analysis Discriminatory Power	165
Appendix 15 Analysis Distractor	167
Appendix 16 Recapitulation of Questions Used in the Large Scales Trial	169
Appendix 17 Analysis Misconceptions.....	170

Appendix 18 Student Interview Sheet 172

Appendix 19 Research Letters 174



THE
Character Building
UNIVERSITY