

[GUIDELINE FOR RESEARCH PROJECT/DISSERTATION REPORT WRITING

1.0 CONTENT

Report writing must include the followings:

- 1.1 Front Cover
- 1.2 Title Page
- 1.3 Author Declaration
- 1.4 Certification
- 1.5 Acknowledgement
- 1.6 Abstract
- 1.7 Table of Contents
- 1.8 List of Tables]
- 1.9 List of Figures
- 1.10 List of Abbreviations
- 1.11 List of Symbols
- 1.12 Content
- 1.13 References
- 1.14 Appendix

1.1 FRONT COVER

The front cover should be written with the title of the report, the student's name and Universiti Teknologi MARA using capital letters. An example is shown in **Appendix 1**.

1.2 TITLE PAGE

Title Page must contain information listed in the following order:

- 1.2.1 Title of the report
- 1.2.2 Student's full name as in identity card
- 1.2.3 Statement of award for the report
- 1.2.4 Name of Faculty/Institute/Centre where the student registered
- 1.2.5 Name of the University
- 1.2.6 Name of campus
- 1.2.7 Month and Year of submission

An example is shown in **Appendix 2**.

1.3 AUTHOR DECLARATION

This page should contain declaration by the student on originality of the project report. The declaration should be signed.

An example is shown in **Appendix 3**.

1.4 CERTIFICATION

A report to be submitted for the purpose of examination must obtain prior declaration by the supervisor and coordinator on the standard and quality of the project report.

An example is shown in **Appendix 4** and **Appendix 5**.

1.5 ACKNOWLEDGEMENT

The student may acknowledge the assistance of various individuals or organizations in successfully producing the project report. This should be written in one page. An example is shown in **Appendix 6**.

1.6 ABSTRACT

It should states the field of study, problem definition, methodology adopted, results obtained and conclusion of the research. The abstract can be written using single spacing. The abstract should be brief, written in one paragraph and not exceed 300 words. An example can be seen in **Appendix 7**.

1.7 TABLE OF CONTENTS

The Table of Contents page must start on a new page. It should list all sections, chapters and sub-headings. The titles must be written using the same words as those written in the text. Examples can be seen in **Appendix 8**.

1.8 LIST OF TABLES

This page should list all the tables according to the title that is written in the text of the report. The page number of the table must also be included. The table numbers should be arranged according to the chapters. See example in **Appendix 9**.

1.9 LIST OF FIGURES

Diagrams, photographs, drawings, graphs, charts and maps are included as figures. The list should be written similar as the List of Tables. See example in **Appendix 10**.

1.10 LIST OF ABBREVIATIONS

All abbreviations found in the text should be listed on this page. See example in **Appendix 11**. They are listed in the following order:

- Roman letters - alphabetical order
- Greek letters - alphabetical order
- Superscripts - alphabetical order
- Subscripts - alphabetical order

1.11 LIST OF SYMBOLS

All symbols found in the text should be listed on this page. See example in **Appendix 12**. They are listed in the following order:

- Roman letters - alphabetical order
- Greek letters - alphabetical order
- Superscripts - alphabetical order
- Subscripts - alphabetical order

1.12 BODY OF THE TEXT

A report must be divided into chapters. A title must be written and it should reflect its content. A new chapter must begin on a new page. A chapter must be divided into sections. These sections must be given appropriate titles and numbered. Texts must be written in paragraphs. Long paragraphs should be avoided. Each paragraph must describe an issue or subject. There must be continuity between paragraphs. See example in **Appendix 13**.

The major sections/chapters of thesis normally include the following:

- (i) **CHAPTER 1: INTRODUCTION**
This chapter includes details of the research background, problem statement, objectives and scope of the research. The past literature should be review critically.
- (ii) **CHAPTER 2: LITERATURE REVIEW**
This chapter includes a fully-referenced review and discussion of previous studies which are relevant to the research.
- (iii) **CHAPTER 3: RESEARCH METHODOLOGY**
This chapter gives a detailed description of the instruments/materials and methods used. Research methods should include experimental design, the number of subject, apparatus, etc. It should be described in details.
- (iv) **CHAPTER 4: RESULTS AND DISCUSSION**
This chapter provides the result and analysis of data. The result obtained can be presented as a series of figures, tables, etc., with descriptive texts and discussions. The discussion of the results related to the hypotheses or the research questions. It highlights the main findings, their significance and implications. The strengths and weaknesses of the results should be discussed.
- (v) **CHAPTER 5: CONCLUSION AND RECOMMENDATIONS**
This chapter contains summary of the main findings. It also highlights the contributions of the findings to new knowledge/applications. It should also discuss the limitations faced in carrying out the research and the recommendations for the future research based on current finding.

Tables in the Text - All tables must be numbered using Arabic numeric. A caption should be positioned at the top of the table. If the caption is written in a single line, it should be centered. If the caption is written more than one line, it should be align to the left. Tables must be numbered with respect to the chapter. For example, Table 4.3 is the third table that appears in chapter 4. A table should be positioned after it is being cited for the first time in the text. All tables in the chapter can also be grouped together and positioned at an appropriate location. All tables must be listed in the List of Tables page.

Figures in the Text - Illustrations such as maps, charts, graphs, drawings, diagrams, and photographs are referred as figures. All figures must be clear and of high quality. Figures must be numbered using Arabic numeric. A caption should be located at the bottom of the figure. If the caption is written in a single line, it should be centered. If the caption is written in more than one line, it should be align to the left. Figures are numbered with respect to the chapter. For example, Figure 4.3 is the third figure that appears in chapter 4.

Illustrations in the form of CD's, slides, and others should be placed in specially made pockets glued to the inner side of the back cover. Oversized illustrations in the form of plans, maps, charts, graphs, and others should be reduced to fit a single page unless the oversized materials are absolutely necessary for clarity and understanding. For illustrations other than above, please refer to the following guidelines;

(a) Photographs

Photographs should be digitally embedded in the text unless absolutely impossible.

(b) Newspaper Cuttings or Similar Materials

Copies of newspaper cuttings or similar materials should be of high quality.

(c) Maps and Aerial Photographs

Maps and aerial photographs to be included in the thesis should have a written approval by *Ketua Pengarah Pemetaan Negara*. It is advisable to scan all illustration materials using a scanner and printing them using a high quality colour printer.

1.13 REFERENCES

References are detailed description of items from which information were obtained in preparing the report. All references must be listed at the end of the text alphabetically. They should be arranged using the methods discussed in Section 10.0. See example in **Appendix 14**.

1.14 APPENDICES

Appendices are supplementary information that can be included as part of the report. All forms including questionnaire, coding form, etc that are related to the project can be accompanied as appendices. List of appendices must begin on a new page. Appendix can be named as Appendix A, Appendix B, and so on, depends on types and quantity to be included. Specific titles can also be given.

2.0 SIZE AND FORMAT

White similar 80 gram high quality A4 size papers (210 × 297 mm) should be used.

3.0 MARGIN

Top	=	1 inch (2.5 cm)
Right	=	1 inch (2.5 cm)
Bottom	=	1 inch (2.5 cm)
Left	=	1.5 inch (4 cm)

4.0 TITLE

All chapter titles must be written with **bold CAPITAL LETTER** and should not be underlined. Subtitles must be written with **bold Title Case**.

5.0 SPACING

1.5 spacing is required for the body of the report. Single spacing is allowed for

- (i) Declaration
- (ii) Certification
- (iii) Acknowledgement
- (iv) Abstract
- (v) List of Reference

6.0 TYPING

A thesis should be typed using word or text processor. The same font type should be used throughout the report. If Microsoft Word is used, font type Times New Roman with font size 12 should be used. The text must be printed on one side only.

7.0 INDENT

Indent for first sentences of every paragraph is one tab or 0.5 inch (1.25cm) except for the first paragraph of every section.

8.0 PAGINATION

Each page of a report must be counted and numbered. Pages should be numbered consecutively. The page numbers should be printed at the top right hand corner, 1.25 cm from the top edge and 2.5 cm from the right edge. Numbering should be as follows:

- (i) Preliminary pages of a thesis, starting from the title page should be numbered using small letter Roman numeric (i, ii, iii, etc.); the texts should be numbered using Arabic numeric (1, 2, 3, etc.).
- (ii) The first page should be the title page. This page should be counted “i” but should not be printed.
- (iii) The first page of the text should be counted “1” but the number should not be printed. Similarly, the first page of all chapters should be counted but the numbers should not be printed.

9.0 NUMBERING THE CHAPTERS AND SUB-SECTIONS

All chapters and their sub-sections must be labelled and numbered. The chapters are numbered using Arabic numeric, i.e. Chapter 1, Chapter 2, Chapter 3, and so on. The sub-sections should not be indented but arranged in a structured manner not more than four levels as follows:

- 2 First level (Title of the chapter)
- 2.1 Second level (Title of the sub-section)
- 2.1.1 Third level (Title of the sub-sub-section)
- 2.1.1.1 Fourth level (Title of the sub-sub-sub-section)

10.0 REFERENCES FORMAT

The references cited in the text, published or unpublished should be located in the References. The list should be placed at the end of the report, a listing of sources actually cited, compiled alphabetically using Harvard System which is based on author’s name and the date (year).

10.1 CITING IN THE TEXT

The references cited in the text should be indicated using the name of the author and the date of publication. Examples are as follow:

- (a) **If the name of an author is written as part of a sentence, the year published should be written in parentheses.**

Example :

Works by Yao (1993) have shown that in order to maintain the behavioural link between the offsprings and their parents, the use of crossover operator should be avoided.

- (b) **If the name of an author is not written as part of a sentence, both the name and year published should be written in parentheses.**

Example :

ANN offers useful properties and capabilities such as non-linearity, input and output mapping, adaptability and fault tolerance among others (Haykin, 1999).

- (c) **If there are two authors for a cited reference, both names should be written.**

Example :

In designing the model for non-linear system, the parsimonious principle (Soderstrom and Stoica, 1989) is critical because a nonlinear model involves an excessive number of parameters.

- (d) **If there are more than three authors for a cited reference, use *et al.* after the name of the first author.**

Example :

The algorithm can be calculated by applying Gram-Schmidt procedures as described by Korenberg *et al.* (1988).

- (e) **If more than one reference materials by the same author in a same year are cited, use small letter alphabets (a, b, c, and so on) to distinguish them.**

Example :

Some of the basic principles widely used by many researchers are Lagrange-Euler (LE) equations (Uicker, 1965; Bejczy and Paul, 1981), Newton-Euler (NE) equations (Luh *et al.*, 1980a) and d'Alembert (GD) equations (Lee *et al.*, 1983).

- (f) **Cross referencing is not allowed in report. Only primary sources should be used.**

10.2 WRITING STYLE FOR AUTHORS' NAMES IN THE LIST OF REFERENCES

Generally authors' names are listed using surname followed by their initials. The followings are examples of writing style according to the name of the author:

- (a) **Single and multiple authors**

Example :

Veres, S. M. (1990) *Structure Selection of Stochastic Dynamic Systems*. New York: Gordon and Breach Science Publishers.

Soderstrom, T. and Stoica, P. (1989) *System Identification*. United Kingdom: Prentice Hall International Ltd.

Luh, J. Y. S., Walker, M. W. and Paul, R. P. (1980b) Resolved-Acceleration Control of Mechanical Manipulators. *IEEE Trans. Automatic Control*, 25(3): 468-474.

- (b) **Editor**

Example :

Martin, A. M. ed. (1991) *Peat as an Agent in Biological Degradation of Waste*. London: Elsevier.

Lees, R. H. and Thomas T. R. eds. (1974) *Chemical Nomenclature Usage*. Chichester: Ellis Horwood.

(c) Corporate author/editor*Example :*

Engineers Joint Council. (1969) *Thesaurus of Engineering and Scientific Terms*.
New York: Engineers Joint Council.

10.3 WRITING STYLE FOR VARIOUS TYPES OF PUBLICATION MATERIALS IN THE LIST OF REFERENCES**(a) Book**

Author (Year) *Title*. Edition(if not the first). Place published: Publisher.

Example :

Theusen, G. J. and Fabrycky, W. J. (1984) *Engineering Economy*. 6th ed. Englewood Cliffs, N. J.: Prentice-Hall.

(b) Article in a book

Author of the article (Year) Title of the article. In: Author of the book. *Title of the book*. Place published: Publisher. page.

Example :

Hussein, S. B., Jamaluddin, H., Mailah, M. and Zalzal, A. M. S. (2000) An Evolutionary Neural Network Controller for Intelligent Active Force Control. In: Parmee, I. C. ed. *Evolutionary Design and Manufacturing*. London: Springer-Verlag. 351 –362.

(c) Journal articles

Author (Year) Title of the article. *Title of the Journal*, Volume (Issue): page.

Example :

Billings, S. A. (1980) Identification of Nonlinear Systems: A survey. *Proc. IEE, Part D*, 127(6): 272-284.

(d) Conference articles

Author (Year) Title of the article. *Name of the conference*. Date of the conference. Place published: Publisher, page.

Example :

Sheta, A. F. and De Jong, K. (1996) Parameter Estimation of Nonlinear Systems in Noisy Environments Using Genetic Algorithms. *Proceedings of the 1996 IEEE International Symposium on Intelligent Control*. September 15-18. Dearborn, Michigan: IEEE, 360 - 365.

(e) Thesis

Author (Year) *Title of the thesis*. Institution: Thesis award

Example :

Adnan bin Hassan (2002) *On-line Recognition of Developing Control Chart Patterns*. Universiti Teknologi Malaysia: Ph.D. Thesis.

(f) Legislations

Name of the country. (Year) *Title of the legislation*. Legislation number.

Example :

Malaysia. (1983) *Perintah Monumen Lama dan Tapak Tanah Bersejarah*. P.U.(A) 41 1983.

(g) Standards

Name of the institution. (Year) *Title of the standard*. Place published, standard number.

Example :

British Standards Institution. (1987) *Tongued and Grooved Software Flooring*. London, BS 1297.

(h) Patent

Owner's name (Year) *Title of the patent*. (patent number).

Example :

Lindgren, E. A. (1960) *Screen Room Air Inlet and Wave Guard*. (U.S. Patent 2, 925, 457).

(i) Unpublished materials (Technical Report, Working Paper and Interview)

Name. (Year) *Title*. Place/Institution, date.

Example :

Rahim Atan dan Mokhtar Yusof. (1998) *Penghidrogenan minyak sawit dengan mangkin platinum*. Laporan akhir projek penyelidikan UiTM 69/85.

Ibrahim Abu Shah. (2001) *History of UiTM, Shah Alam*. Interview, 20 Ogos.

Bahagian Pendidikan Guru. (1989) *Pendekatan baru tugas dan tanggungjawab pensyarah maktab-maktab perguruan Malaysia*. Kertas kerja Mesyuarat Pengetua-pengetua Maktab Perguruan Malaysia Kali Kedua. Lumut, Perak, 7 – 9 Ogos.

(j) Electronic References (CD-ROM, Website, Website database)

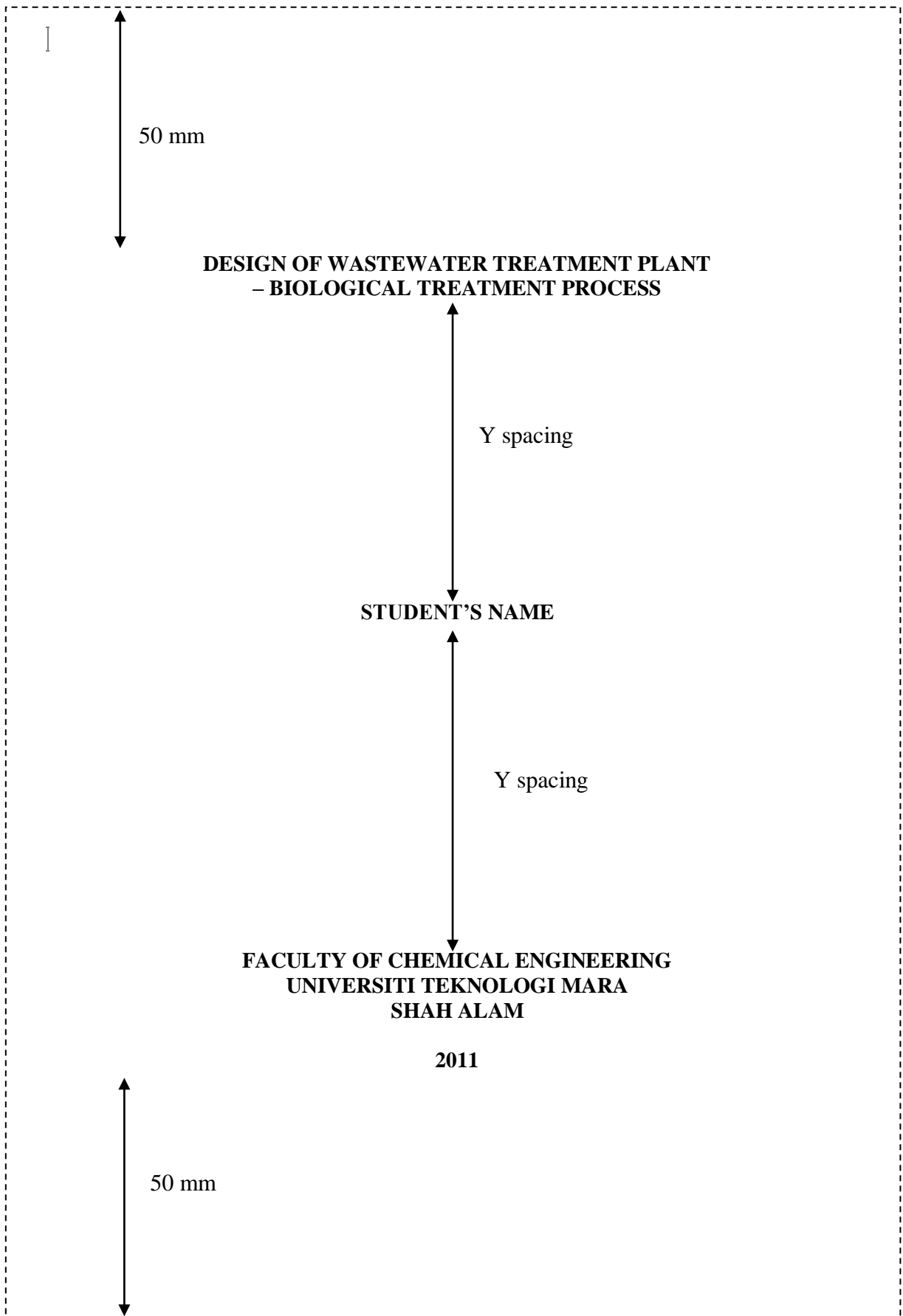
Writer's name (Year) Article title. *Journal Title*, Volume (issue): page. (Type of reference) website address/ file number/ folio number (date of access)

Example :

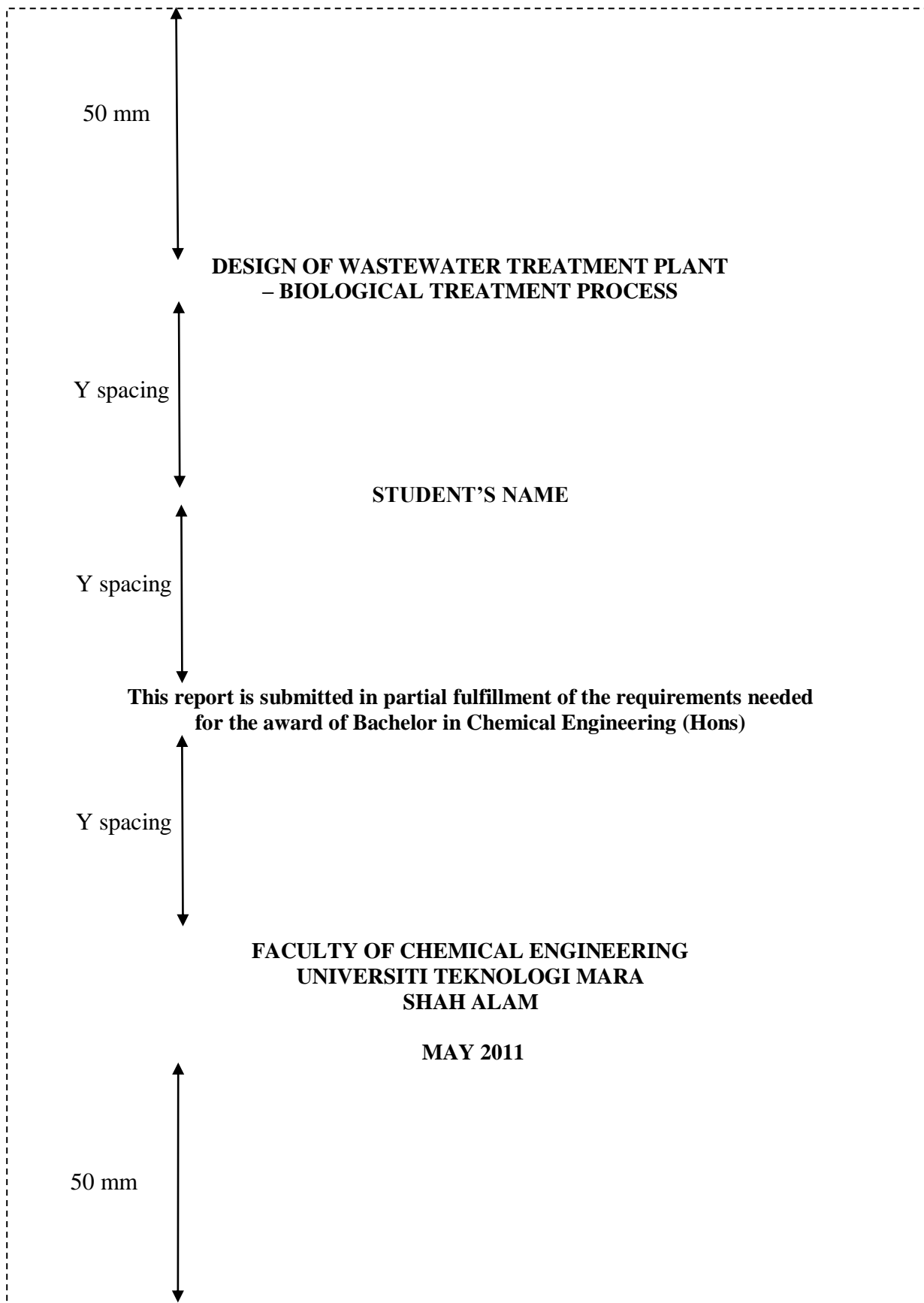
Kawasaki, J. L. (1996) Computer administered survey in extension. *Journal of Extension*, 33(3) : 204 – 210 (on-line) <http://www.apa.org/journals/webret.html> (18 November 1999).

Howel, V. & Carlton, B. (1993) Growing up tough : New generation fights for its life. *Birmingham News* (CD-ROM) 1A. 1994 SIRS/ SIRS 1993 Youth/Jilid 4/Makalah 56A (20 Julai 2000).

SAMPLE OF FRONT COVER – APPENDIX 1



SAMPLE OF TITLE PAGE – APPENDIX 2



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**DESIGN OF WASTEWATER TREATMENT PLANT
– BIOLOGICAL TREATMENT PROCESS**

Y spacing

STUDENT'S NAME

Y spacing

**This report is submitted in partial fulfillment of the requirements needed
for the award of Bachelor in Chemical Engineering (Hons)**

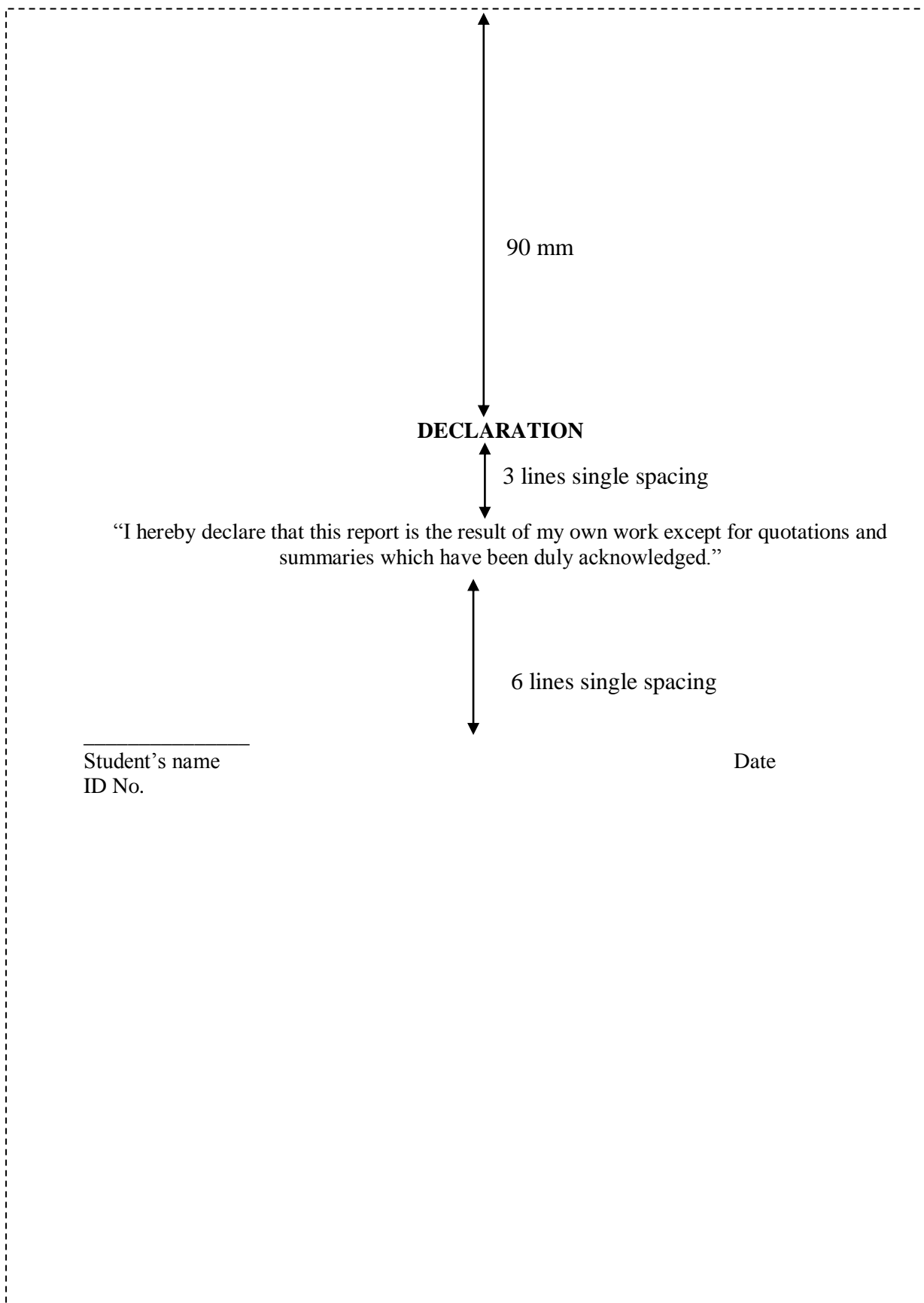
Y spacing

**FACULTY OF CHEMICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
SHAH ALAM**

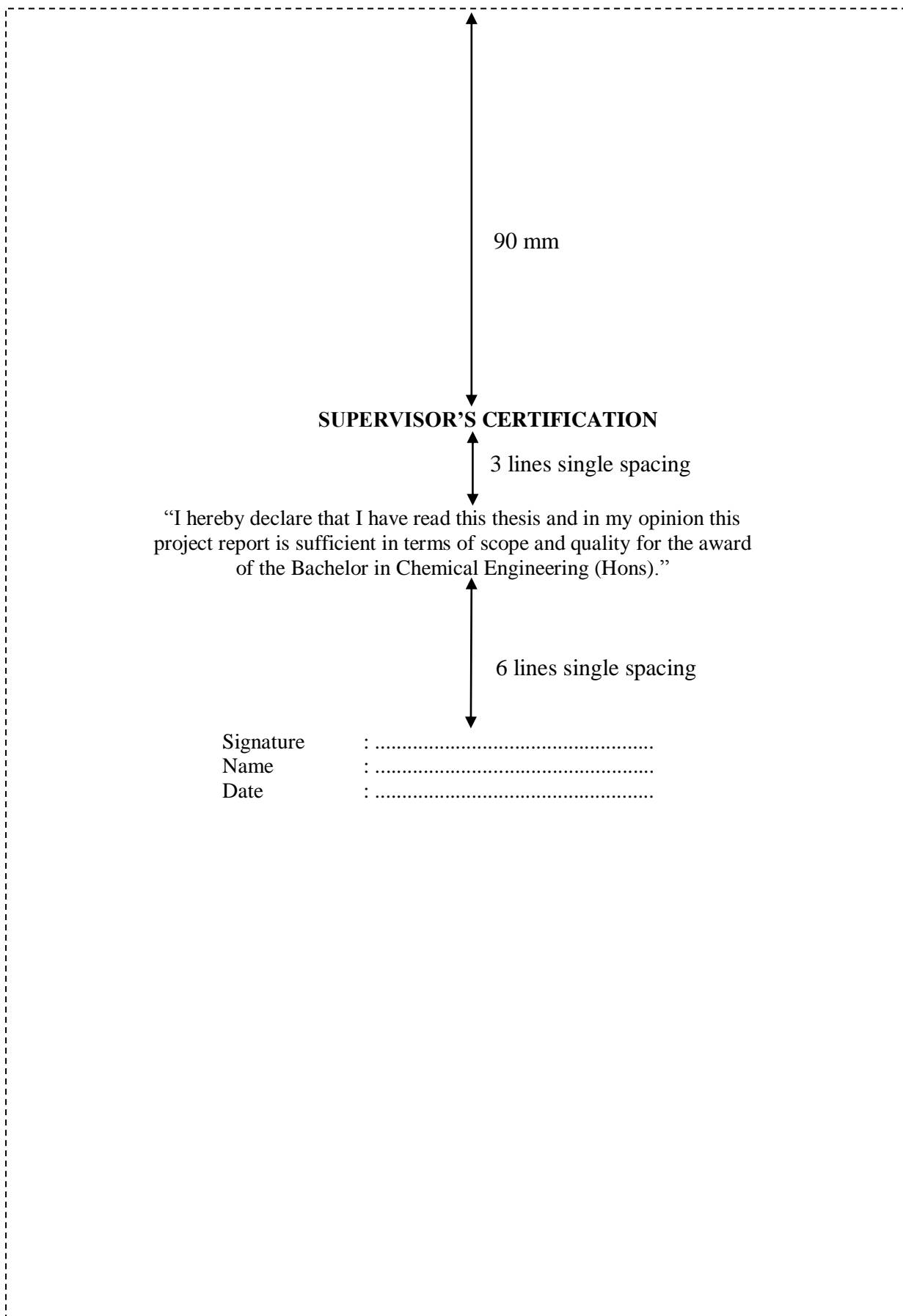
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SAMPLE OF AUTHOR DECLARATION – APPENDIX 3



SAMPLE OF SUPERVISOR'S CERTIFICATION – APPENDIX 4



SAMPLE OF COORDINATOR'S CERTIFICATION – APPENDIX 5

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Accepted:

6 lines single spacing

Signature :

Date :

Head of Programme
Ms Nornizar Anuar
Faculty of Chemical Engineering
Universiti Teknologi MARA
Shah Alam

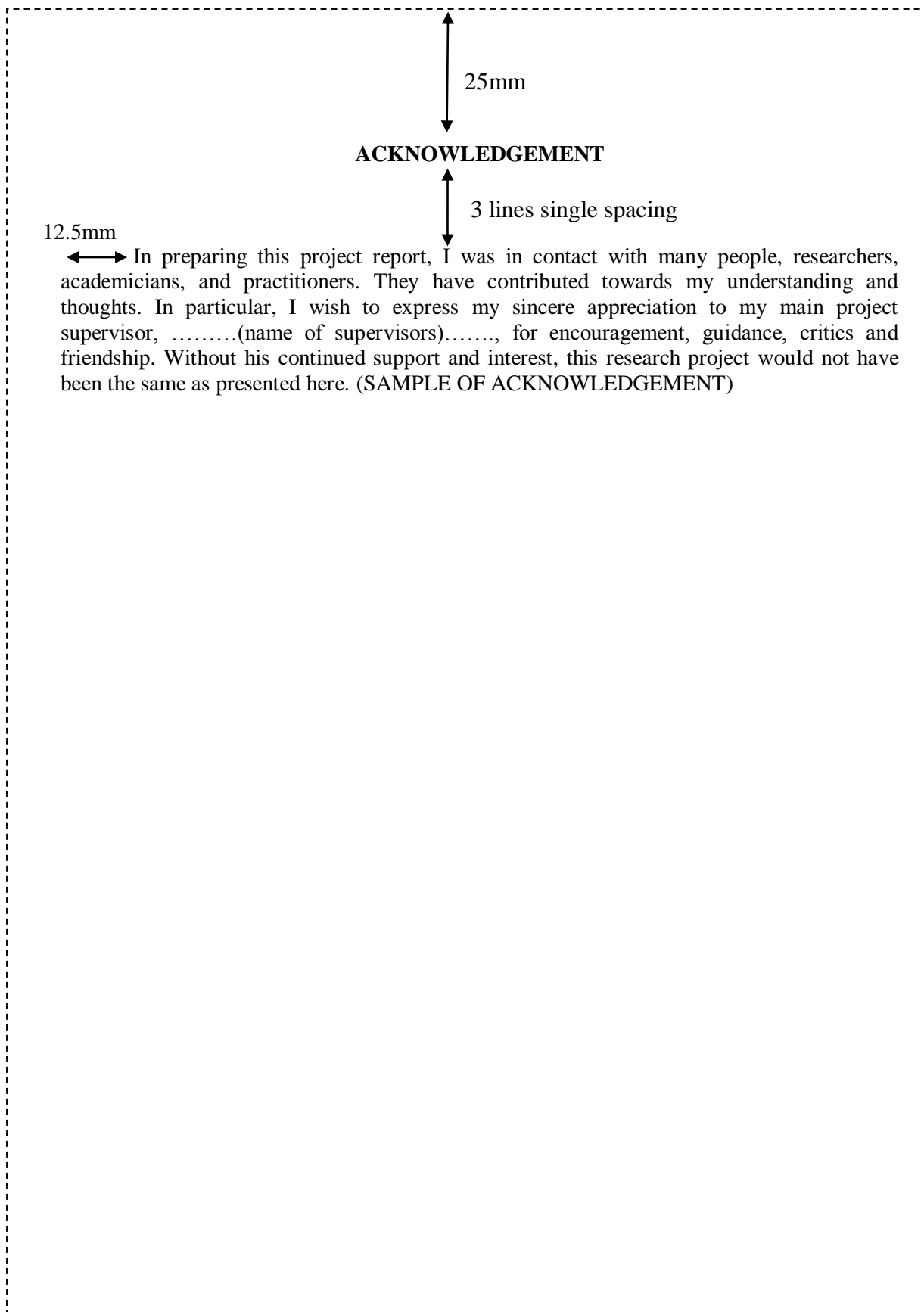
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Signature :

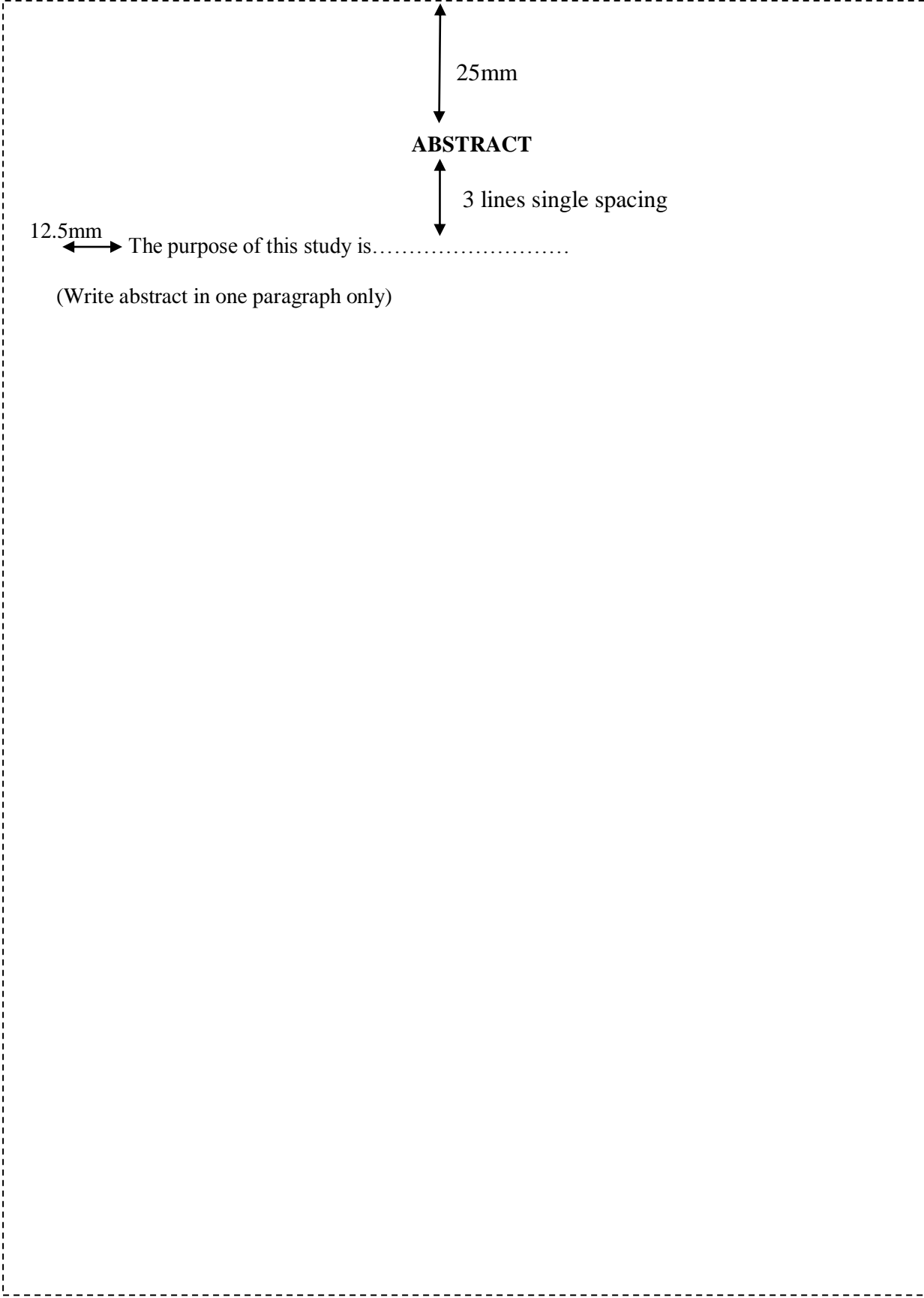
Date :

Coordinator
Ms Faraziehan Senusi
Faculty of Chemical Engineering
Universiti Teknologi MARA
Shah Alam

SAMPLE OF ACKNOWLEDGEMENT – APPENDIX 6



SAMPLE OF ABSTRACT – APPENDIX 7



ABSTRACT

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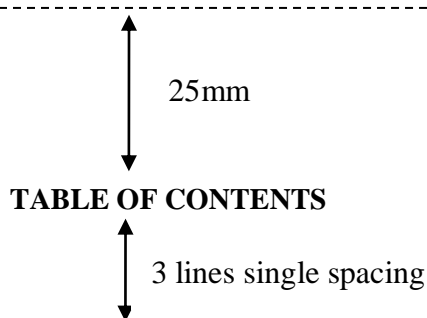
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The purpose of this study is.....

(Write abstract in one paragraph only)

SAMPLE OF TABLE OF CONTENTS – APPENDIX 8



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SAMPLE OF LIST OF TABLE – APPENDIX 9

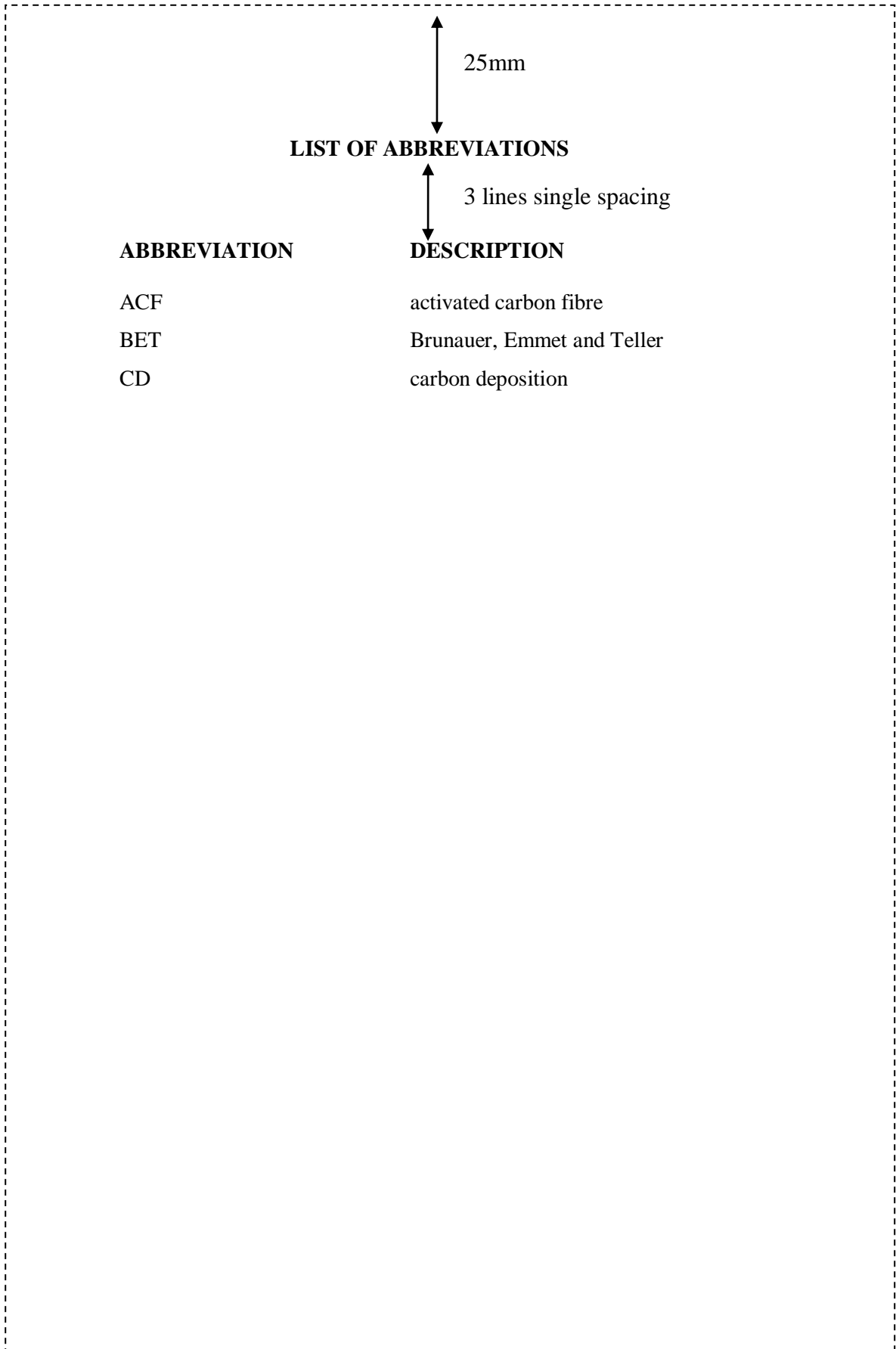
TABLE	TITLE	PAGE
1.1	Wastewater Characteristics	5
1.2	Important contaminants of concern in wastewater treatment	10
1.3	Typical composition of untreated wastewater	15

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LIST OF TABLES
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1.1	Schematic diagram of biological treatment	5
2.1	Hydraulic profile for treatment plant	10
2.3	Process flow diagram for treatment plant	15

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LIST OF FIGURES
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LIST OF ABBREVIATIONS

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ABBREVIATION

DESCRIPTION

ACF

activated carbon fibre

BET

Brunauer, Emmet and Teller

CD

carbon deposition

SAMPLE OF LIST OF SYMBOLS – APPENDIX 12

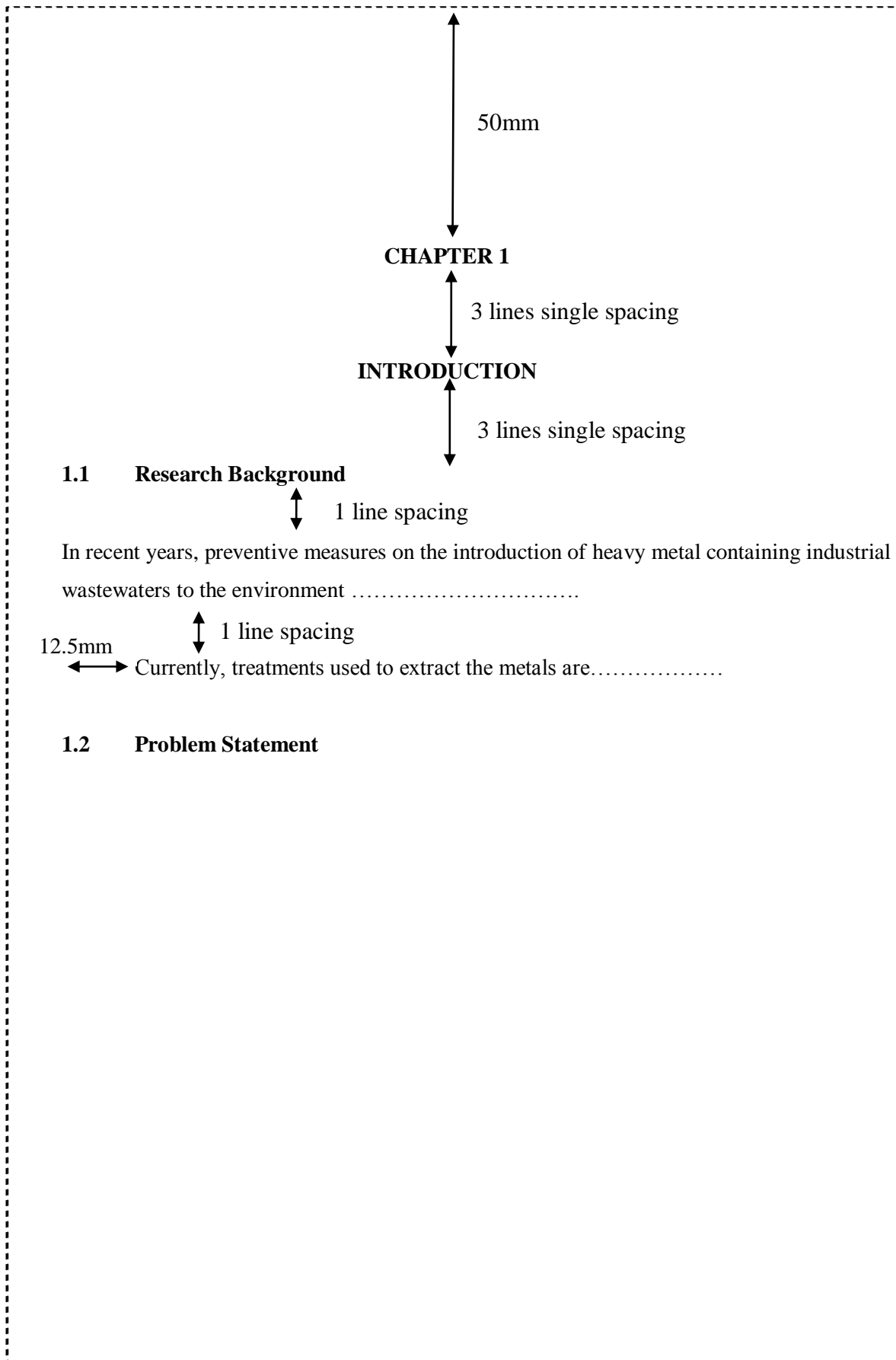
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LIST OF SYMBOLS

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SYMBOL	DESCRIPTION
A	radial coordinate
D	Diffusivity ($\text{cm}^2 \text{s}^{-1}$)
ΔG	change in Gibbs free energy

SAMPLE OF BODY TEXT - APPENDIX 13



SAMPEL OF REFERENCES – APPENDIX 14

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REFERENCES

3 lines single spacing

Edzwald, J.K. (1993) Coagulation in drinking water treatment: particles, organics and coagulants. *Water Science Technology*, 27(11): 21 – 35.

Fatoki, O.S. and Ogunfowokan, A.O. (2002) Effect of coagulant treatment on the metal composition of raw water. *Water SA*, 28(3): 293 – 298.

Kang, M., Kamei, T. and Magara, Y. (2003). Comparing polyaluminium chloride and ferric chloride for antimony removal. *Water Research*, 37(17): 4171 – 4179.