

# Thesis Manual

A handbook containing requirements for format and arrangement



---

Office of Research  
Shanmugha Arts, Science, Technology & Research Academy  
SASTRA Deemed University  
Thanjavur – 613 402  
India.

## Table of Contents

<b>Thesis Format Checklist.....</b>	<b>iv</b>
<b>1. General Information.....</b>	<b>1</b>
1.1. Plagiarism.....	1
1.2. Copyright.....	1
1.3. Multiple-Volume Theses . . . . .	1
1.4. Style . . . . .	1
1.5. Thesis Format Approval Process . . . . .	1
1.6. Approval Form Requirements.....	2
1.6.1. Thesis Approval Form . . . . .	2
1.6.2. Completion Form . . . . .	2
1.7. Library Submission Information.....	2
1.7.1. Print Version . . . . .	2
1.7.2. Binding.....	3
1.7.3. Electronic Version . . . . .	3
1.7.4. Final Degree Clearance.....	3
<b>2. Thesis Format and Appearance.....</b>	<b>4</b>
2.1. Methods of Production.....	4
2.2. Typed or Computer-Generated Originals . . . . .	4
2.3. General Formatting Guides.....	4
2.3.1. Type . . . . .	4
2.3.2. Margins . . . . .	4
2.3.3. Pagination . . . . .	4
2.3.4. Spacing.....	5
2.3.5. Footnotes . . . . .	5
2.3.6. Tables and Figures . . . . .	5
2.3.7. Illustrative Materials . . . . .	5
<b>3. Thesis Arrangement.....</b>	<b>6</b>
3.1. Title Page . . . . .	6
3.2. Quick Guide to Arranging your Thesis.....	6
3.3. Copyright Page.....	6
3.4. Dedications . . . . .	6
3.5. Acknowledgments.....	7
3.6. Table of Contents.....	7
3.7. List of Tables . . . . .	7
3.8. List of Figures . . . . .	7
3.9. Abstract . . . . .	8
3.10. Blank Page . . . . .	8
3.11. Text . . . . .	8
3.12. Headings in Text.....	8
3.13. Footnotes . . . . .	9
3.14. Bibliography (References) . . . . .	9
3.15. Appendices.....	9
3.16. Blank Page . . . . .	9

<b>Sample Thesis Approval Form (TA Form)</b> .....	10
<b>Sample Completion Form (C Form)</b> .....	11
<b>Sample Title Page</b> .....	12
<b>Sample Table of Contents</b> .....	13
<b>Sample List of Tables</b> .....	14
<b>Sample List of Figures</b> .....	15
<b>Sample Abstract</b> .....	16
<b>Sample List of References</b> .....	17

## DOCTORAL THESIS FORMAT CHECKLIST

This checklist is to be used in conjunction with *SASTRA's Thesis Manual*. The page numbers in parentheses refer to specific parts of the manual. Please make sure you have checked off all items on this list before you submit your thesis or dissertation to the thesis format reviewer.

### ARRANGEMENT (page 6)

- Thesis/dissertation follows the arrangement specified on page 10 of the *Thesis Manual*

### MARGINS (page 4)

- Left margin is at least 1½ inches wide on every page, including those with tables and figures
- Right, top, and bottom margins are at least 1 inch wide on every page, including those with tables and figures

### PAGINATION (page 4)

- Page numbers are in upper right-hand corner of page, at least ¾ inch from top
- Preliminary pages (Dedications through Abstract) are numbered using lower-case roman numerals (e.g., ii, iii)
- Main text (Chapter 1 through end of thesis or dissertation) is numbered consecutively using Arabic numerals (e.g., 1, 2, 3)

### TITLE PAGE (pages 6, 12)

- Title page follows format shown on page 12 of *Thesis Manual*
- Month and year of defense are given
- The page is counted as “i” but not numbered

### COPYRIGHT OR BLANK PAGE (pages 1, 6)

- Copyright page follows the format shown on page 6 of the *Thesis Manual*
- If thesis/dissertation is not copyrighted, a blank page has been inserted
- The page is neither counted nor numbered

**DEDICATIONS (optional) (page 6)**

- The heading **Dedications** appears at the top of the page and is bold and centered.

**ACKNOWLEDGMENTS (optional) (page 7)**

- The heading **Acknowledgments** appears at the top of the page and is bold and centered.

**TABLE OF CONTENTS (pages 7, 13)**

- The heading **Table of Contents** appears at the top of the page and is bold and centered.
- The wording of the entries matches exactly the wording of the headings in the text.
- Titles are separated from page numbers with right-justified tabs and dot leaders (not periods).

**LIST OF TABLES (pages 7, 14)**

- The heading **List of Tables** appears at the top of the page and is bold and centered.
- The wording of the entries matches exactly the wording of the table captions in the text.
- Table captions are separated from page numbers with right-justified tabs and dot leaders (not periods).

**LIST OF FIGURES (pages 7, 15)**

- The heading **List of Figures** appears at the top of the page and is bold and centered.
- The wording of the entries matches exactly the wording of the figure captions in the text.
- Figure captions are separated from page numbers with right-justified tabs and dot leaders (not periods).

**ABSTRACT (pages 8, 16)**

- Ph. D. abstract is 350 words or less
- Abstract follows the format on page 16 of the *Thesis Manual*
- The heading material is single-spaced
- The abstract text begins four single-spaced lines below heading
- The text is double-spaced

**BLANK PAGE (page 8)**

- A blank page (not counted or numbered) has been inserted after the abstract.

**TEXT (page 8)**

- Font size is between 9 and 12 points, including chapter titles.
- General text is double -spaced.
- Thesis/dissertation is printed single – sided.

**HEADINGS IN TEXT (page 8)**

- Chapter headings appear at the top of the page and are bold and centered.
- In chapter headings, chapter title directly follows chapter number, separated by either a period or a colon and one space.
- A consistent style (either all capital letters, title case, or sentence case) has been followed for each of the different levels of heading.
- Headings are single spaced

**TABLES (page 5)**

- Table captions are directly above the tables, immediately follow the table number, and are single spaced.
- Table captions have followed a consistent style (either title case or sentence case\*)
- There should be three single – spaced lines of space above and below each table (above the caption)

**FIGURES (page 5)**

- Figure captions are beneath the figures, directly follow the figure number, and are single spaced
- Figure captions have followed a consistent style (either title case or sentence case\*)
- There should be three single-spaced lines of space above and below each figure (below the caption)

**FOOTNOTES (optional) (pages 5, 8)**

- Footnotes are separated from text with a line
- There should be one single-spaced line of space between line and first footnote.
- Each footnote entry is single -spaced.

**LIST OF REFERENCES (pages 9, 17)**

- Heading is bold and centered.
- There should be four single -spaced lines of space below the heading.
- Each entry is single-spaced.
- Double spacing is used between entries.
- Individual entries are not split over two pages.

**APPENDICES (page 9)**

- The heading (e.g., Appendix A) and the title are on the same line, separated by a colon or period
- Heading is bold and centered.
- The appendix material begins four single – spaced lines below the heading.

**BLANK PAGE (page 9)**

- A blank page (not counted nor numbered) has been inserted at the end of the dissertation/thesis.

## **Introduction**

This manual explains the format and arrangement requirements for your thesis or dissertation as established by the Office of Research, SASTRA Deemed University

### **1. General Information**

The Doctoral Thesis, or Dissertation, is an extended written treatise that represents original results and interpretations of a unique investigation by the degree candidate. It is required as partial fulfillment for an advanced degree at SASTRA Deemed University

#### **1.1. Plagiarism**

Plagiarism includes the direct copying of text material, the use of other people's data without acknowledgement and the use of other people's ideas with adequate attribution. If you include copyrighted material in your thesis/dissertation manuscript, you are responsible for obtaining written permission from the owner. SASTRA takes no responsibility for damages that may arise from copyright violations by a degree candidate

#### **1.2. Copyright**

The depositing of a dissertation or a thesis in the library almost certainly constitutes publication. The student owns the copyright whether (a) the student choose to include a copyright page in the bound copies of their thesis or (b) register with the Copyright Office

#### **1.3. Multiple-Volume Theses**

If your original printed thesis/dissertation exceeds a thickness of 1 7/8 inches, the thesis must be bound in more than one volume. The second volume should contain a title page that duplicates the title page of the first volume. Also, individual identification such as "Volume 1" and "Volume 2," or some descriptive word such as "Appendices" must be included on both title pages. All pages in additional volumes must continue the numbering from Volume 1 with the second title page not counted or numbered. Contact the Thesis Format Reviewer for help in arranging and formatting multiple-volume theses

#### **1.4. Style**

You can use any professionally recognized style appropriate to your field of study

#### **1.5. Thesis Format Approval Process**

This portion of the General Information section explains the process for Thesis Format approval

- 1.5.1. At least 4 weeks prior to your defense, submit a draft of your thesis/dissertation to the Thesis Format Reviewer



- 1.5.2. The Thesis Format Reviewer will take about one week to review your thesis/dissertation and then contact you to schedule a review appointment
- 1.5.3. During the review meeting the Reviewer will discuss any format changes that are needed
- 1.5.4. After you make the necessary format changes, you must re-submit your thesis/dissertation to the reviewer
- 1.5.5. After you defend, make all content changes as required by the defense committee
- 1.5.6. Obtain all required departmental signatures, then schedule a final review meeting with the Reviewer. Bring your final thesis/dissertation and all signed paperwork. If your final thesis/dissertation is correct, the Reviewer signs the Completion Form for final format approval
- 1.5.7. Take all forms and all required copies of your thesis/dissertation to the Library. You must submit a total of three copies of your thesis/dissertation to the Library after the Reviewer approves it. One copy must be on 100% cotton 20–24 lb. bond paper. The other two copies can be on regular copy paper. (See section 1.5 for further information.)

## **1.6. Approval Form Requirements**

### **1.6.1. Thesis Approval Form (TA Form)**

SASTRA Library will bind one copy of the thesis approval form with each print copy of the thesis/dissertation. The student shall bring this form to the Thesis Format Reviewer after the final defense. The Reviewer will check for all appropriate signatures. Although the Reviewer does not sign the TA form, he/she must see the completed, signed TA form before approving a final thesis/dissertation.

### **1.6.2. Completion Form (C Form)**

The Thesis Format Reviewer will sign on this form when he/she approves the thesis/dissertation after your defense. The Reviewer will check that you have the appropriate signatures and will sign the form. Submit the signed C Form to the Dean Research, SASTRA Deemed University for final degree clearance.

## **1.7. Library Submission Information**

### **1.7.1. Print Version**

For thesis format approval, follow carefully the guidelines discussed in Sections 3.1 through 3.16. All copies must be clean, error-free, typed / printed only on one side of the page (not double-sided), properly collated and unbound.

You may use either word processor or desktop publishing system to produce a uniform style. Also, even if you use a grammar, punctuation, or spell checker program, please take the time to proofread your dissertation or thesis carefully. After all, these electronic tools will not catch every error and usually the computers are set to check for spelling in American–English whereas the spelling must be in accordance with British–English. Offset, letterpress, or laser printing is only acceptable and the pages must conform to good printing standards throughout. The paper size must be 8 1/2" x 11". Mimeographed or similarly produced copies are not acceptable. Any work prepared by offset should be typed on a word processing or desktop publishing system that meets typescript standards.

### **1.7.2. Binding**

SASTRA Library will bind your thesis/dissertation after submission of the printed copies. The binding process will take 2–3 weeks. After binding, the Library will file the original, one photocopy of the thesis/dissertation will be sent to the School, the third copy to the supervising professor and the fourth to the Association of Indian Universities (AIU), New Delhi.

The student will not get any of these bound copies back. If the student desires to have a bound copy for himself/herself, you must submit extra copies to the Library and pay an extra binding fee.

### **1.7.3. Electronic Version**

The University requires electronic submission of all dissertations. The electronic version of the thesis/dissertation must comply with all the requirements for printed thesis or dissertations as explained in the Thesis Manual.

The document should be in Adobe Portable Document Format (PDF) format. No compression or password protection should be employed. Be sure to examine the PDF version of your thesis or dissertation and check it for completeness and fidelity to the print version.

You may include internal or external hyperlinks in the PDF version of your thesis or dissertation. If you are linking to a specific file (as opposed to a World Wide Web site) then you must include that file(s) when you submit the electronic copy of your thesis or dissertation.

Only files in the following formats will be accepted:

**Images:** GIF (.gif), JPEG (.jpeg), and TIFF (.tif)

**Video:** Apple Quick Time (.mov), Microsoft Audio Video Interleaved (.avi), and MPEG (.mpg)

**Audio:** MIDI (.midi), SND (.snd), and WAV (.wav)

**Other:** HTML (.html) and Microsoft Word (.doc)

### **1.7.4. Final Degree Clearance**

After you submit all materials to the Library and obtain the required signatures on the Completion Form, and submit the signed form to the Dean, Research for final degree clearance.

## **2. Thesis Format and Appearance**

### **2.1. Methods of Production**

All theses and dissertations must be typed using word processing or page layout software. No other production methods are acceptable.

### **2.2. Typed or Computer–Generated Originals**

One copy must be on quality white opaque paper, 20–24 lb. bond, 100% cotton, 8 1/2" x 11" sheets. This paper may be purchased at any stationery or office supply store. Other printed copies, including drafts submitted to the Thesis Format Reviewer, may be on any good quality white paper and may be photocopied.

### **2.3. General Formatting Guidelines**

This section describes general formatting rules for all theses/dissertations. For specific formatting and arrangement rules for each part of the thesis, please refer to Section 3.

#### **2.3.1. Type**

- Font size must be 12 points, including chapter titles
- Print must be legible and readable
- No specific font is required; however, traditional serif fonts such as Times or Palatino are encouraged. Fonts must be consistent throughout the document (e.g., if captions are 10-point Times in chapter 1, they must be 12-point Times in all other chapters)
- Where hand work is required, use black India ink

#### **2.3.2. Margins**

- The left margin must be at least 1 1/2" (1.5 inches) throughout the document
- All other margins (top, bottom, and right) must be at least 1"
- Headings and subheadings must have at least two full lines of body text below them. If only one line of text fits below a heading, move the heading to the next page

#### **2.3.3. Pagination**

- Number all pages consecutively
- Place page numbers in the upper right-hand corner of the page, 3/4" from the top
- Use lowercase Roman numerals for preliminary pages
- Use Arabic numbers for the text, references, appendices, bibliography, and all other pages including photographs, illustrations, and drawings
- Begin these numbers on the first page of the text and continue in consecutive order until the end of the dissertation or thesis
- Page numbers on landscaped pages should be in portrait orientation
- Do not use a period after the page number
- Do not number the title page even though it is counted as "i."
- Do not insert lettered page numbers such as 10a, 10b, 10c, etc.

### 2.3.4. Spacing

- Double space general text material
- Insert at least 3 single-spaced lines of space above table captions and figures and below figures captions, tables, and other graphics
- Single space footnotes and long quotations
- Single space bibliographic entries, **but** double space **between** each bibliographic entry

### 2.3.5. Footnotes

- Separate footnotes from the text with a line, and leave one single-spaced line of space between the line and the footnote

### 2.3.6. Endnotes

- Alternatively, you may number the passages which require explanation by serially superscripting them and give notes at the end of each chapter

### 2.3.7. Tables and Figures

- For both tables and figures, use a word processor or black India ink and a lettering guide for captions, numerals, symbols and characters
- Document margin limitations apply to tables and figures. Tables and figures **cannot** extend into any of the margins
- Insert at least 3 single-spaced lines of space above table captions and figures and below figure captions, tables, and other graphics
- Place figure captions below figures. Place table captions above tables
- If a figure or a table continues onto a subsequent page(s), include the following caption: Table x (*continued*) or Figure x (*continued*)
- Landscaped figures and tables should have landscaped captions. Page numbers should be in portrait orientation
- Tables and figures can be grouped in a separate chapter in the text or as an appendix.

### 2.3.8. Illustrative Materials

- Make sure all illustrative materials conform to permanent record standards and are as close as possible to the same size and margins as the text
- If you must use larger illustrative material, fold it with a minimum number of folds so that it falls within the margins of a normal text page (8 1/2" x 11")
- Since binding of a thesis requires edge trimming, illustrative material too close to the sewing or trimming edges will be defaced during the binding process
- If a diagram, photograph, or similar material is smaller than thesis page size (8 1/2" x 11"), mount it with a high-quality permanent adhesive. Do not use glue, mounting tape or rubber cement. Instead, use permanent archival adhesive such as dry mounting tissue, library paste or spray-on adhesive
- Where possible, print photographs on 8 1/2" x 11" single weight photographic paper
- Include and number the sheets as a part of the text
- Use India ink to add labels and captions on photographs

- You must obtain prior approval from the Thesis Format Reviewer before attaching any other materials to your thesis/dissertation

### 3. Thesis Arrangement

This section describes how you should arrange the parts of your thesis. You must include each item in the list below in your thesis (unless it is noted “optional”). The parts must appear **in the exact order** described in the list below.

#### 3.1. Title Page

- The title page should look exactly like the sample on page 12
- Use your full name, including your initial
- Write out the name of the degree for which you are a candidate. All Ph.D. candidates must use Doctor of Philosophy
- Use the month and year in which you defend your thesis or dissertation
- This page is counted but not numbered (it counts as page i but should not have a page number)

#### 3.2. Quick Guide to Arranging Your Thesis

1. Title page
2. Copyright page **optional**)
3. Dedications **optional**)
4. Acknowledgments **optional**)
5. Table of Contents
6. List of Tables
7. List of Figures
8. Abstract
9. Blank page
10. Text
11. Bibliography (or References)
12. Appendices
13. Blank page

#### 3.3. Copyright Page

Include a copyright page with the following information: a copyright notice, full legal name of author, and date of publication on file. Centre the information on the page as shown:

© Copyright 2000  
Suresh Rajan Deemed University. All Rights Reserved.

This page is neither counted nor numbered

#### 3.4. Dedications (Optional)

- The Dedications page is optional

- The heading **Dedications** must appear at the top of the page. The heading must be bold, centered, and without punctuation
- This page is counted and numbered in lowercase Roman numerals

### 3.5. Acknowledgments (Optional)

- The Acknowledgments page is optional, but most theses do include a brief statement of thanks or recognition of any special assistance
- The heading **Acknowledgments** must appear at the top of the page. The heading must be bold, centered, and without punctuation
- This page is counted and numbered in lowercase Roman numerals

### 3.6. Table of Contents

- The Table of Contents should follow closely the sample on page 13
- The heading **Table of Contents** must appear at the top of the first page. The heading must be bold, centered, and without punctuation
- Do not list any sections that precede the Table of Contents (e.g., Dedications, Acknowledgments). Do not list the Table of Contents itself
- List chapter titles and at least the first or second order subdivisions. Make sure that chapter and section titles are worded exactly as they appear in the body of the thesis
- Single space each entry, but double space between entries
- Separate titles from page numbers with right-justified tabs and dot leaders. **Do not use periods to separate titles and page numbers**
- These pages are counted and numbered in lowercase Roman numerals

### 3.7. List of Tables

- The List of Tables should follow closely the sample on page 14
- The heading **List of Tables** must appear at the top of the first page. The heading must be bold, centered, and without punctuation
- List table captions exactly as they appear **above** the tables in the text. Single-space each entry, but double-space between entries
- Separate table captions from page numbers with right-justified tabs and dot leaders. Do not use periods to separate captions and page numbers
- These pages are counted and numbered in lowercase Roman numerals

### 3.8. List of Figures

- The List of Figures should follow closely the sample on page 15
- The heading **List of Figures** must appear at the top of the first page. The heading must be bold, centered, and without punctuation
- List figure captions exactly as they appear **below** the figures in the text. Single-space each entry, but double-space between entries
- Separate figure captions from page numbers with right-justified tabs and dot leaders. Do not use periods to separate captions and page numbers
- These pages are counted and numbered in lowercase Roman numerals

### 3.9. Abstract

- The Abstract should follow closely the sample on page 16
- The abstract is a summary that allows readers to determine the value of reading the full thesis. It should include a statement of the problem, an outline of procedures or methods, and a summary of results and conclusions
- The thesis abstracts must be 350 words or less
- The following heading must be centered at the top of the first page:

**Abstract**

Full Title of Dissertation or Thesis

Author's Name as it appears on the Dissertation or Thesis

Supervisor's Name

- The text begins four lines below this heading
- The text must be double spaced. (Note that the heading lines are single spaced)
- The pages are counted and numbered in lowercase Roman numerals

### 3.10. Blank Page

- Include a blank page (with no page number) before the first page of the text
- The blank page is neither numbered nor counted

### 3.11. Text

- Divide the text into its major parts/chapters/subsections. No fixed arrangement is necessary
- The major parts may contain such subjects as introduction, general argument, description of experimental procedures, research methods, discussion, summary, conclusions, recommendations, and other pertinent topics that are necessary for a complete understanding on the part of a sophisticated or professional reader
- The chapter and section titles should be the same as the headings listed in the Table of Contents
- If your thesis or dissertation includes a list of nomenclature and symbols, include the list as an appendix
- The pages are counted and numbered in Arabic numerals

### 3.12. Headings in Text

- Chapter headings must be bold and centered
- The chapter number and title must be on the same line, separated by a colon or period, as shown in the example below:

**CHAPTER 1: INTRODUCTION**

- Headings must not be larger than 12 points
- Headings must be single spaced

### 3.13. Footnotes (optional)

- Each footnote cites an authority for statements in the text
- Number each footnote chronologically in Arabic numerals
- Place each footnote on the same page on which it appears in the text
- Separate footnotes from the text with a line. Leave one single-spaced line of space between the line and the first footnote
- Single space each footnote entry

### 3.14. Bibliography (References)

- The Bibliography (References) should follow closely the sample on page 17
- The heading **Bibliography (References)** must appear at the top of the first page
- The heading must be bold, centered, and without punctuation
- Begin the list of sources four spaces below the heading
- Single space within each entry and double space between entries
- Do not split entries over two pages. If an entire entry does not fit on one page, place the entire entry on the next page
- Entries may be in any consistent arrangement (e.g., alphabetical by author, numerical, or chronological) as specified by professional journals standard in your discipline
- These pages are counted and numbered in Arabic numerals

### 3.15. Appendices

- If supplementary original data, illustrative material, a detailed derivation of equations, an extensive proof of a theorem, or a quotation too extensive for the body of the thesis are included, they may be presented in appendices. Similar material should be gathered in a single appendix.
- If your thesis/dissertation includes a list of nomenclature and symbols, include the list as an appendix
- Number the appendices consecutively either alphabetically or numerically (**Appendix A, Appendix B...** or **Appendix 1, Appendix 2...**)
- The heading **Appendix A** (or **B, C, 1, 2**) and the title of the material must be bold, centered, and without punctuation
- The appendix material should begin four spaces below the heading
- List each appendix and its title separately in the Table of Contents
- The pages are counted and numbered in Arabic numerals

### 3.16. Blank Page

- Include a blank page (with no page number) at the end of the thesis or dissertation
- The blank page is neither counted nor numbered



**Thesis Approval Form (TA Form)**

SASTRA Library will bind a copy of this form with each copy of your thesis/dissertation.

This thesis, entitled \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

and authored by \_\_\_\_\_, is hereby accepted and approved.

**Signatures:**

*Chairman, Examining Committee:*

\_\_\_\_\_

*Supervising Professor:*

\_\_\_\_\_

*Committee Members:*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

*Dean of the School*

\_\_\_\_\_

*Dean, Research*

\_\_\_\_\_

**Completion Form**

This form is to be completed and submitted to the Dean, Research

**Please type or print clearly.**

Name to Appear on the Ph. D. Degree:

\_\_\_\_\_

School: \_\_\_\_\_

Exact Thesis Title:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Graduation Year: \_\_\_\_\_ Signature: \_\_\_\_\_

Please print the name of your supervising professor: \_\_\_\_\_

**Certifications and Approvals:**

Supervising Professor \_\_\_\_\_ Date \_\_\_\_\_

Dean of the School \_\_\_\_\_ Date \_\_\_\_\_

Thesis Format Reviewer \_\_\_\_\_ Date \_\_\_\_\_

Library \_\_\_\_\_ Date \_\_\_\_\_

After acquiring all signatures as listed above, bring the original form to the Dean Research for final clearance and signatures.

Dean, Research \_\_\_\_\_ Date \_\_\_\_\_

**SAMPLE – Title Page**

Center vertically and horizontally (remember to adhere to the 1 1/2" left margin).

**Coenzyme Fluorescence Responses of Yeast and Hybridoma  
Cultures to Induced Metabolic Transitions**

A Thesis

Submitted to the Faculty

of

SASTRA Deemed University

by

Suresh Rajan

in partial fulfillment of the

requirements for the degree

of

Doctor of Philosophy

June 2006

**(Only the title should be bold)**

**SAMPLE – Table of Contents**

These pages are numbered using lowercase Roman numerals.

**Table of Contents**

LIST OF TABLES.....

LIST OF FIGURES .....

ABSTRACT.....

1. BACKGROUND AND LITERATURE SURVEY ..... 1

    1.1. General..... 1

    1.2. Forced-Convection Vaporization ..... 2

    1.3. Flow Visualization Studies ..... 5

    1.4. Heat Transfer..... 13

        1.4.1. Forced Convection Surface Boiling..... 14

        1.4.2. Incomplete Evaporation..... 17

2. APPARATUS AND TEST PROCEDURE ..... 32

    2.1. General Flow System..... 32

    2.2. Test Section..... 36

    2.3. Instrumentation..... 40

    2.4. Pressure Measurement ..... 41

    2.5. Electric Power Measurement ..... 44

3. DATA ..... 49

4. RESULTS ..... 56

    4.1. Heat Transfer Coefficients..... 58

    4.2. Correlations ..... 80

5. CONCLUSIONS AND RECOMMENDATIONS..... 89

REFERENCES..... 98

APPENDIX A: MEASUREMENT ERRORS ..... 99

**SAMPLE – List of Tables**

These pages are numbered using lowercase Roman numerals

**List of Tables**

Table 1.1.	Analysis of Variance of Frequency of Pango Responses on the Training Task (Exp. Group 1) .....	32
Table 1.2.	Analysis of Variance of Frequency of Pango Responses on the Training Task (Exp. Group 2) .....	39
Table 1.3.	Analysis of Variance of Frequency of Pango Responses on the Training Task (Exp. Group 3) .....	40
Table 2.1.	Analysis of Variance of Frequency of Pango Responses on the Training Task (Grade 1) .....	44
Table 2.2.	Analysis of Variance of Frequency of Pango Responses on the Training Task (Grade 5) .....	45
Table 2.3.	Analysis of Variance of Frequency of Pango Responses on the Training Task (Grade 8) .....	46
Table 3.1.	Analysis of Variance of Frequency of Pango Responses on Compounding Task (Exp. Group 1) .....	56
Table 3.2.	Analysis of Variance of Frequency of Pango Responses on Compounding Task (Exp. Group 2) .....	57
Table 3.3.	Analysis of Variance of Frequency of Pango Responses on Compounding Task (Exp. Group 3) .....	58
Table 3.4.	Analysis of Variance of Mean Number of Ss Utilizing Each of the Five Compounding Strategies .....	64
Table 4.1.	Number of Ss Using the Same Strategy on Two to Six Probabilistic Compounds .....	71
Table 4.2.	Means and Standard Deviations of the Components Associated with the Six Compounds; During Trial Blocks 5 and 6 of the Training tasks .....	72

**SAMPLE – List of Figures**

This page is numbered using lower case Roman numerals.

**List of Figures**

Figure 1.1.	Forced Convection Vaporization in a Uniformly Heated Horizontal Tube.....	9
Figure 1.2.	Acceleration Pressure Drop Factor, $r$ for Refrigerant.....	12
Figure 1.3.	Frictional Pressure Drop Factor, for Refrigerant 12.....	12
Figure 2.1.	Data of Schrock and Grossman .....	19
Figure 2.2.	Data of Bryan and Seibel.....	24
Figure 2.3.	Data of Bo Pierre and Altman, Norris, and Staub .....	27
Figure 3.1.	Data of Anderson.....	29
Figure 3.2.	Schematic of Test Loop.....	33
Figure 3.3.	Details of Heater Chamber Design .....	35
Figure 3.4.	Thermocouple and Pressure Tap Locations .....	37
Figure 4.1.	Details of Test Section Construction: Conical End Connections and Pressure Tap Construction.....	39
Figure 4.2.	Temperature Measuring Circuit .....	42
Figure 4.3.	Pressure Measuring Circuit .....	43
Figure 4.4.	Wall and Refrigerant Temperature Profiles for Run16 .....	52
Figure 5.1.	Heat and Transfer Coefficient Profiles for Run 1.....	57
Figure 5.2.	Heat and Transfer Coefficient Profiles for Run 4.....	58
Figure 5.3.	Heat and Transfer Coefficient Profiles for Run 10.....	59
Figure 5.4.	Heat and Transfer Coefficient Profiles for Run 16.....	60



**SAMPLE – References**

Single space within each entry and double space between entries

**References:**

1. Jennette JC, Falk RJ. Small-vessel vasculitis. *N Engl J Med* 1997; 337: 1512–23.
2. Jennette JC, Falk RJ, Andrassy K, et al. Nomenclature of systemic vasculitides: proposal of an international consensus conference. *Arthritis Rheum* 1994; 37: 187–92.
3. Guillevin L, Druand Gasselín D, Cevallos R, et al. Microscopic polyangiitis: clinical and laboratory findings in eighty-five patients. *Arthritis Rheum* 1999; 42: 421–30.
4. Falk RJ, Jennette JC. Anti-neutrophil cytoplasmic autoantibodies with specificity for myeloperoxidase in patients with systemic vasculitis and idiopathic necrotizing and crescentic glomerulonephritis. *N Engl J Med* 1988; 318: 1651–57.
5. Guillevin L, Lhote F. Treatment of polyarteritis nodosa and microscopic polyangiitis. *Arthritis Rheum* 1998; 41: 2100–5.
6. Haubitz M, Schellong U, Göbel HJ, et al. Intravenous pulse administration of cyclophosphamide versus daily oral treatment in patients with antineutrophil cytoplasmic antibody-associated vasculitis and renal involvement: a prospective, randomized study. *Arthritis Rheum* 1998; 41: 1835–44.
7. Falk RJ, Hogan S, Carey TS, Jennette JC. Clinical course of anti-neutrophil cytoplasmic autoantibody-associated glomerulonephritis and systemic vasculitis: the Glomerular Disease Collaborative Network. *Ann Intern Med* 1990; 113: 656–63.
8. Hoffman GS, Leavitt RY, Fleisher TA, et al. Treatment of Wegener’s granulomatosis with intermittent high-dose intravenous cyclophosphamide. *Am J Med* 1990; 89: 403–10.
9. Westman KWA, Bygren PG, Olsson H, et al. Relapse rate, renal survival, and cancer morbidity in patients with Wegener’s granulomatosis or microscopic polyangiitis with renal involvement. *J Am Soc Nephrol* 1998; 9: 842–52.
10. Nowack R, Göbel U, Klooker P, et al. Mycophenolate mofetil for maintenance therapy of Wegener’s granulomatosis and microscopic polyangiitis: a pilot study in 11 patients with renal involvement. *J Am Soc Nephrol* 1999; 10: 1965–71.
11. Haubitz M, Koch KM, Brunkhorst R. Cyclosporin for the prevention of disease reactivation in relapsing ANCA-associated vasculitis. *Nephrol Dial Transplant* 1998; 13: 2074–6.
12. Allison AC, Eugui EM. Immunosuppressive and other effects of mycophenolic acid and an ester prodrug, mycophenolate mofetil. *Immunol Rev* 1993; 136: 5–28.