[PROJECT TITLE]

A Dissertation Submitted
in Partial Fulfilment of the Requirements
for the Degree of

MASTER OF SCIENCE

in **[Department]**

by

[Full Name]
(Reg. No. [IMSXXXXX])

to

SCHOOL OF [DEPARTMENT]
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
THIRUVANANTHAPURAM
INDIA - 695 551

September 2025

CERTIFICATE

This is to certify that this dissertation entitled **"[Project Title]"** submitted by [**Full Name**] **(Reg. No.:** [**IMSXXXXX**]**)** towards the partial requirement of **Master of Science** in [**Department**], has been duly examined by the thesis committee appointed by the institute. The committee deems the candidate's work satisfactory and recommends that the report be accepted.

.....	.....	.....
[TC Member 1]	**[TC Member 2]**	**[TC Member 3]**
[Faculty Position]	[Faculty Position]	[Faculty Position]

.....
[Project Supervisor]
Project Supervisor

24 September 2025
Thiruvananthapuram - 695 551

DECLARATION

I, [**Full Name**] (**Reg. No.:** [**IMSXXXXX**]), hereby declare that this dissertation entitled **"**[**Project Title**]**"**, submitted to Indian Institute of Science Education and Research, Thiruvananthapuram, towards the partial requirement of **Master of Science** in [**Department**], is a bona fide record of original work carried out by me under the supervision of [**Project Supervisor**].

This dissertation has never been submitted in part or in full for a degree, diploma or fellowship to this or any other university before. I duly acknowledge all external contributions, statements, datasets or results used, and have listed their sources with adequate detail in the bibliography.

.....

[Full Name]

Reg. No.: [IMSXXXXX]

In my capacity as the project supervisor for the aforementioned candidate, I confirm that the above statements by the candidate are true to the best of my knowledge.

.....

[Project Supervisor]

Project Supervisor

24 September 2025
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[Insert Acknowledgements here ...]

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ABSTRACT

Student Name: [**Full Name**] Reg. No.: [**IMSXXXXX**]
Degree: **Master of Science** Dept.: **School of** [**Department**]
Thesis Title: [**Project Title**]
Thesis Supervisor: [**Project Supervisor**]
Date of thesis submission: **24 September 2025**

The main aim of the project ...

Keywords:

Contents

List of Figures

List of Tables

Chapter 1

Introduction

Introductory lines...

1.1 Section-1 Name

Some text here.

Definition 1.1.1. Some definition...

Theorem 1.1.2. *Some theorem...*

Proof. Proof is as follows... □

Corollary 1.1.3. *A corollary to Theorem 1.1.2 is...*

Remark 1.1.4. Some remark...

1.1.1 Equations and Math Examples

Equations can be typed as follows:

$$f(x) = \frac{x^2 - 5x + 6}{(e^x - 2)/10} = 10 \times \frac{(x-2)(x-3)}{e^x - 2} \tag{1.1}$$

Referencing labelled objects: Equation 1.1, or Theorem 1.1.2.

For multiline equations,

$$\text{Array in Math Mode} \quad \begin{cases} -\Delta u + \lambda u &= |u|^{p-2}, & \text{in } \Omega \\ u &\geq 0, & u \in H_0^1(\Omega) \end{cases} \tag{1.2}$$

Using `array` in math mode or `eqnarray` is a quick and easy way to get the most customisable equation output, but is outdated and longer equations are prone to errors. Use of alternate multiline equation environments like `multiline`(*), `align`(*), `gather`(*) or `split` in any math-mode environment is recommended.

$$\begin{aligned} g(\theta) &= i\theta & &= (i\theta) \times \ln e \\ &= \ln(e^{i\theta}) & &= \ln(\cos\theta + i\sin\theta) \end{aligned} \tag{1.3}$$

1.2 Section-2 Name

Matrices in LaTeX look like:

$$\begin{pmatrix} \sin\theta & \cos\theta \\ -\cos\theta & \sin\theta \end{pmatrix} \times \begin{pmatrix} \sin\theta & \cos\theta \\ -\cos\theta & \sin\theta \end{pmatrix} = \begin{pmatrix} \sin^2\theta - \cos^2\theta & 2\cos\theta\sin\theta \\ -2\cos\theta\sin\theta & -\cos^2\theta + \sin^2\theta \end{pmatrix}$$
$$= \begin{pmatrix} -\cos 2\theta & \sin 2\theta \\ -\sin 2\theta & -\cos 2\theta \end{pmatrix}$$

The brackets of a given matrix depend on the type of matrix called.

Here is a quick truth table:

P	Q	$\neg P$	$\neg P \to (P \vee Q)$
T	T	F	T
T	F	F	T
F	T	T	T
F	F	T	F

Remark 1.2.1. Defining a table like this does not count in the LoT; use the `table` environment instead.

Remark 1.2.2. You can cite sources in footnotes as so.[1] Ensure `ref.bib` is configured for biblatex. Disable `verbose` style to switch to inline references.

[1] G.H. Golub and C.F. Van Loan. *Matrix Computations*. Second Edition. The John Hopkins University Press, 1989, pp. xiii+283.

1.2.1 Subsections

Subsubsection Example

Subsubsections do not appear in the ToC and lack numbering[2]. To skip numbering in sections/subsections, use `\section*{`*section_name*`}`.

Theorem 1.2.3. *Some theorem...*

Proof. The proof is as follows... □

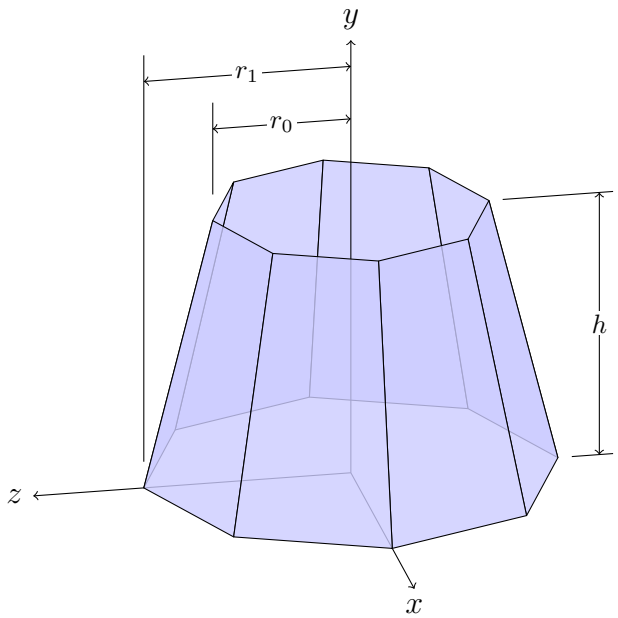

Figure 1.1: 3D Cone designed by Gene R. using TikZ, see `Images/Figures/3D_Cone.tex`. Delete to save compile time.

Remark 1.2.4. Figures float by default. Position may differ from the order in the code. Use optional arguments [!htbp] (here, top, bottom, next page) to influence placement.

To make your own commutative diagrams, consider using tools such as GraphViz, Quiver and IPE.

[2]Footnotes work for comments as well. For more, see https://www.overleaf.com/learn/latex/Footnotes

1.3 Sample Question and Proof

Suppose A_i is a connected subset of a topological space X for $i = 1, \ldots, n$, and $A_i \cap A_{i+1} \neq \emptyset$ for all i. Prove that $A = \bigcup_{i=1}^{n} A_i$ is connected.

Proof by Contradiction. Assume A is disconnected. A can then be written as a union of two non-empty, disjoint, relatively open subsets, say, X and Y. Take some $x \in X$ and some $y \in Y$, with $x \in A_j$ and $y \in A_k$ for some $j \leq k$. Then

$$\begin{aligned} & A_l \cap A_{l+1} \neq \emptyset \qquad \forall\, l \in \{j, \ldots, k-1\} \\ \Rightarrow \qquad \therefore \quad & \bigcup_{i=j}^{l} A_i \text{ is connected} \qquad \forall\, l \in \{j, \ldots, k\} \end{aligned} \tag{1.4}$$

Hence, $\bigcup_{i=1}^{n} A_i$ contains both x and y and is connected, contradicting our original assumption of the disjointness of X and Y. Therefore, $A = \bigcup_{i=j}^{k} A_i$ is connected. $\square$

Remark 1.3.1. `\quad`, `\qquad`, `\,` and `\!` are effective in adjusting spacing as needed.

Appendices

Appendix A

Long Appendix Title Here

Write your Appendix content here. Sections and subsections can be used as well.

A.1 First Appendix Section

A.1.1 First Appendix Subsection

First Appendix Subsubsection

Appendices will show up in the ToC numbered as letters. This is of course totally customizable, please refer to the CTAN documentation (https://ctan.org/pkg/appendix?lang=en) for further clarity on the same.

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