Preparing Exam Papers in LaTeX

T.O. Ting

Xian Jiaotong-Liverpool University

toting@xjtlu.edu.cn

April 21, 2015

Overview

Table of Contents

Introduction

- The LaTeX tool has been used by the scientific community in the aim of presenting a document in an elegant manner.
- The learning curve may be challenging, but over a long run, it saves us precious time.
- Only basic LaTeX knowledge is necessary to use this template (will be free for those who attend this talk).
- This template has been improved for many times by myself, used in three modules up to now.

Introduction

- The LaTeX tool has been used by the scientific community in the aim of presenting a document in an elegant manner.
- The learning curve may be challenging, but over a long run, it saves us precious time.
- Only basic LaTeX knowledge is necessary to use this template (will be free for those who attend this talk).
- This template has been improved for many times by myself, used in three modules up to now.

Introduction

- The LaTeX tool has been used by the scientific community in the aim of presenting a document in an elegant manner.
- The learning curve may be challenging, but over a long run, it saves us precious time.
- Only basic LaTeX knowledge is necessary to use this template (will be free for those who attend this talk).
- This template has been improved for many times by myself, used in three modules up to now.

Introduction

- The LaTeX tool has been used by the scientific community in the aim of presenting a document in an elegant manner.
- The learning curve may be challenging, but over a long run, it saves us precious time.
- Only basic LaTeX knowledge is necessary to use this template (will be free for those who attend this talk).
- This template has been improved for many times by myself, used in three modules up to now.

Quick Look at The Exam Template

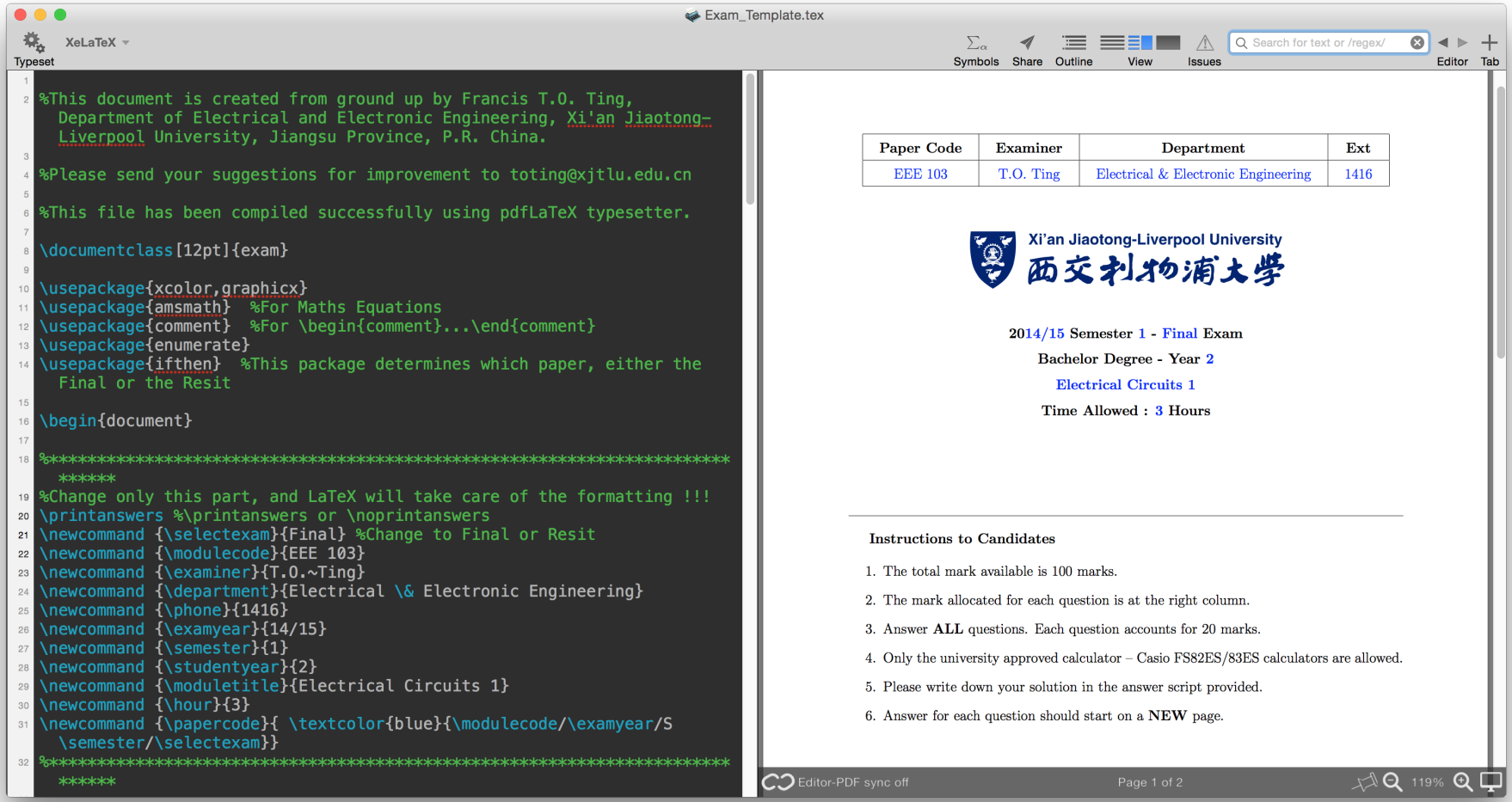

Figure: Exam Template

Table of Contents

Advantages

Convenient

- Working on just one document, instead of four.
- Numbering are automatic (for tables, figures, and questions).
- Equations are easy in LaTeX, avoiding proprietary MathType.
- Embeds comment to a question easily.

Focus & Time-saving

Helps to focus on the content. Over a long run, the time spend on formatting is almost zero!

Elegant

Portrays equations in elegant and convenient manner.

Advantages

Convenient

- Working on just one document, instead of four.
- Numbering are automatic (for tables, figures, and questions).
- Equations are easy in LaTeX, avoiding proprietary MathType.
- Embeds comment to a question easily.

Focus & Time-saving

Helps to focus on the content. Over a long run, the time spend on formatting is almost zero!

Elegant

Portrays equations in elegant and convenient manner.

Advantages

Convenient

- Working on just one document, instead of four.
- Numbering are automatic (for tables, figures, and questions).
- Equations are easy in LaTeX, avoiding proprietary MathType.
- Embeds comment to a question easily.

Focus & Time-saving

Helps to focus on the content. Over a long run, the time spend on formatting is almost zero!

Elegant

Portrays equations in elegant and convenient manner.

Advantages

Convenient

- Working on just one document, instead of four.
- Numbering are automatic (for tables, figures, and questions).
- Equations are easy in LaTeX, avoiding proprietary MathType.
- Embeds comment to a question easily.

Focus & Time-saving

Helps to focus on the content. Over a long run, the time spend on formatting is almost zero!

Elegant

Portrays equations in elegant and convenient manner.

Advantages

Convenient

- Working on just one document, instead of four.
- Numbering are automatic (for tables, figures, and questions).
- Equations are easy in LaTeX, avoiding proprietary MathType.
- Embeds comment to a question easily.

Focus & Time-saving

Helps to focus on the content. Over a long run, the time spend on formatting is almost zero!

Elegant

Portrays equations in elegant and convenient manner.

Advantages

Convenient

- Working on just one document, instead of four.
- Numbering are automatic (for tables, figures, and questions).
- Equations are easy in LaTeX, avoiding proprietary MathType.
- Embeds comment to a question easily.

Focus & Time-saving

Helps to focus on the content. Over a long run, the time spend on formatting is almost zero!

Elegant

Portrays equations in elegant and convenient manner.

Advantages

Convenient

- Working on just one document, instead of four.
- Numbering are automatic (for tables, figures, and questions).
- Equations are easy in LaTeX, avoiding proprietary MathType.
- Embeds comment to a question easily.

Focus & Time-saving

Helps to focus on the content. Over a long run, the time spend on formatting is almost zero!

Elegant

Portrays equations in elegant and convenient manner.

Table of Contents

Only modify these parts

```
%*****************************************************************************
%Change only this part, and LaTeX will take care of the rest!!!
\printanswers %\printanswers or \noprintanswers
\newcommand {\selectexam}{Final} %Change to Final or Resit
\newcommand {\modulecode}{EEE 103}
\newcommand {\examiner}{T.O.~Ting}
\newcommand {\department}{Electrical \& Electronic Engineering}
\newcommand {\phone}{1416}
\newcommand {\examyear}{14/15}
\newcommand {\semester}{1}
\newcommand {\studentyear}{2}
\newcommand {\moduletitle}{Electrical Circuits 1}
\newcommand {\hour}{3}
%*****************************************************************************
```

Figure: Main Parts for Modification

Only modify these parts

```
19 %Change only this part, and LaTeX will take care
20 \printanswers %\printanswers or \noprintanswers
21 \newcommand {\selectexam}{Resit} %Change to Resi
```

Figure: Either "printanswers" or "noprintanswers" for desired output

Hands-on Stuffs

Example (Start A Question)

```
\begin{question}
\newpage\question[20] %Question 1
...
\newpage\question[20] %Question 2
...
\end{question}
```

Hands-on Stuffs

Example (Start A Solution)

```
\begin{solution}
...
\end{solution}
```

Hands-on Stuffs

Example (Start A Sub-question)

```
\newpage\question[20]
Referring to Figure \ref{fig11_31}, answer the following
questions:
\begin{parts}
\part [10] What load impedance $Z_L$ will draw the maximum
average power from the source?
\part[10] Calculate the maximum average power supplied
to the load.
\end{parts}
```

Hands-on Stuffs

Question 4 (20 points)

Referring to Figure 5, answer the following questions:

(a) What load impedance Z_L will draw the maximum average power from the source? [10]

(b) Calculate the maximum average power supplied to the load. [10]

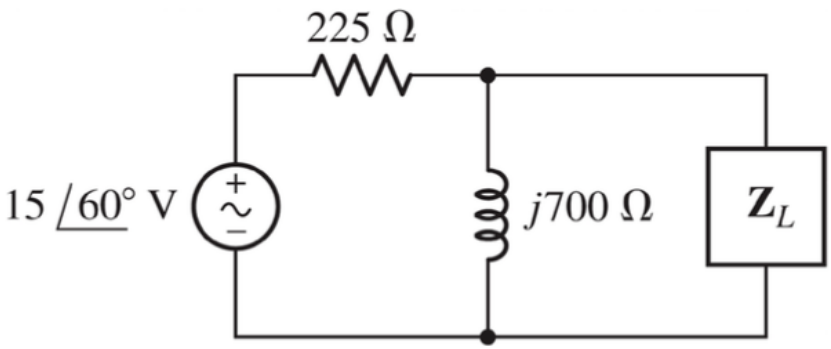

Figure 5: Circuit for question 4

Figure: Example of sub-question

Hands-on Stuffs

Example (Sub-sub-question)

```
\newpage\question[20]

\begin{parts}
\part Refer to Figure \ref{fig3a}.  Given that
$i_L=\cos(10^6t)$ A.

\begin{subparts}
\subpart[5] Determine $v_c(t)$.
\subpart[5] Determine $i_s(t)$.
\end{subparts}
```

Hands-on Stuffs

Question 3 (20 points)

(a) Refer to Figure 5. Given that $i_L = \cos(10^6 t)$ A.

i. Determine $v_c(t)$. [5]

ii. Determine $i_s(t)$. [5]

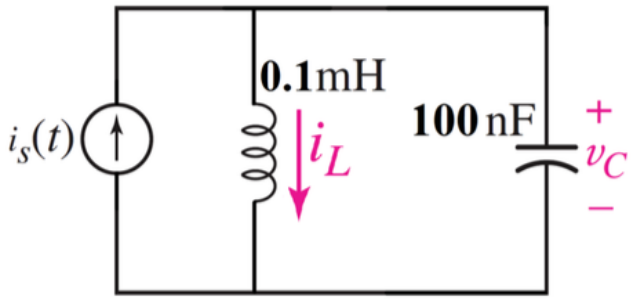

Figure 5: Circuit for question 3(a)

Figure: Example of sub-sub-question

Example (Solution)

```
\newcommand\cc{\color{red}} %cc is change color

\begin{solution}

\begin{eqnarray*}
V_{th}&=&\frac{j700}{225+j700}(15\angle 60^\circ)
=14.28\angle 78^\circ\,\tx{V\quad{\cc 5 marks}}\\

Z_{th}&=&\frac{225(j700)}{225+j700}
=204+j65.5\,\Omega\quad\tx{{\cc 5 marks}}\\
\end{eqnarray*}

\end{solution}
```

Hands-on Stuffs

Solution:

$$V_{th} = \frac{j700}{225 + j700}(15\angle 60^\circ) = 14.28\angle 78^\circ \,\text{V} \quad 5 \text{ marks}$$

$$Z_{th} = \frac{225(j700)}{225 + j700} = 204 + j65.5\,\Omega \quad 5 \text{ marks}$$

Figure: Example of a solution

Note: A solution will be encapsulated automatically in a box

Table of Contents

A Short Demonstration

More Information

- ⇒ This template utilized the "exam.cls," used by many universities to typeset professional exam papers.
- ⇒ More information can be found in "examdoc.pdf."
- ⇒ Many more details on the typesetting and handy tools are elaborated in this document.

Five HOWs

1. How to prepare beautiful exam papers?
2. How to get good feedback from moderators?
3. How to avoid working on four documents in exam preparation?
4. How to update your paper, after moderation, in a very short time?
5. How to embed hidden comments in your exam paper?

Table of Contents

Possible Outcomes

Comment from Liverpool's Moderator / External Examiner

- Both Final and Resist exams are well written papers and clearly assess the learning outcomes of the module.
- The language used in the papers is clear and the diagrams use standard symbols and units. I did not find any typographical or grammatical errors.
- The paper is of a suitable national standard, with the English being of a high quality in both the examination and in the solutions. The resit exam and solutions are of a similar high standard.

Possible Outcomes

Comment from Liverpool's Moderator / External Examiner

- Both Final and Resist exams are well written papers and clearly assess the learning outcomes of the module.
- The language used in the papers is clear and the diagrams use standard symbols and units. I did not find any typographical or grammatical errors.
- The paper is of a suitable national standard, with the English being of a high quality in both the examination and in the solutions. The resit exam and solutions are of a similar high standard.

Possible Outcomes

Comment from Liverpool's Moderator / External Examiner

- Both Final and Resist exams are well written papers and clearly assess the learning outcomes of the module.
- The language used in the papers is clear and the diagrams use standard symbols and units. I did not find any typographical or grammatical errors.
- The paper is of a suitable national standard, with the English being of a high quality in both the examination and in the solutions. The resit exam and solutions are of a similar high standard.

Possible Outcomes

Comment from Liverpool's Moderator / External Examiner

- Both Final and Resist exams are well written papers and clearly assess the learning outcomes of the module.
- The language used in the papers is clear and the diagrams use standard symbols and units. I did not find any typographical or grammatical errors.
- The paper is of a suitable national standard, with the English being of a high quality in both the examination and in the solutions. The resit exam and solutions are of a similar high standard.

Table of Contents

Conclusions

- ⇒ LaTeX is a handy tool and it helps us to focus on the content.
- ⇒ In a long run, LaTeX saves our precious time.
- ⇒ The outlook from LaTeX is appealing and elegant.
- ⇒ Enjoy using LaTeX for your exams!

Conclusions

- ⇒ LaTeX is a handy tool and it helps us to focus on the content.
- ⇒ In a long run, LaTeX saves our precious time.
- ⇒ The outlook from LaTeX is appealing and elegant.
- ⇒ Enjoy using LaTeX for your exams!

Conclusions

- ⇒ LaTeX is a handy tool and it helps us to focus on the content.
- ⇒ In a long run, LaTeX saves our precious time.
- ⇒ The outlook from LaTeX is appealing and elegant.
- ⇒ Enjoy using LaTeX for your exams!

Conclusions

- ⇒ LaTeX is a handy tool and it helps us to focus on the content.
- ⇒ In a long run, LaTeX saves our precious time.
- ⇒ The outlook from LaTeX is appealing and elegant.
- ⇒ Enjoy using LaTeX for your exams!

The End