

UNIVERSITY OF ESSEX

First Year Examinations 2017

CALCULUS

Time allowed: 2 hours 30 minutes

The following items are provided:

Graph Paper

The paper consists of thirteen questions.

The questions are not equally weighted and are in order of increasing weight.

Candidates must attempt all questions.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked.

At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

First Year Examinations 2017

APPLIED MATHEMATICS

Time allowed: 1 hour 30 minutes.

The paper consists of four questions, each with parts A and B.

Candidates must answer all questions.

Each question (parts A and B combined) is marked out of 25.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

First Year Examinations 2017

STATISTICS I

Time allowed: 1 hour 30 minutes

The following items are provided:

Graph Paper

The paper consists of **FIFTEEN** questions.

The questions are not equally weighted.

Candidates must attempt all questions.

You must show all your working for each question to get full marks. At the end of the paper are formulae for the Binomial and Poisson distributions and abbreviated tables of the distribution function for a standard normal random variable, Z , and for a t distributed random variable, T_v , with v degrees of freedom.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

First Year Examinations 2017

LINEAR MATHEMATICS

Time allowed: 1 hour 30 minutes

The following items are provided:

Graph Paper

The paper consists of eight questions.

The questions are not of equal weight.

Candidates must answer all questions.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

First Year Examinations 2017

INTRODUCTION TO COMPUTING

Time allowed: 1 hour 30 minutes

The paper consists of **EIGHT** questions. The questions are divided into two sections (section A on MATLAB and section B on Maple).

The marks in brackets provide an indication of the proportion of the total marks for the paper which will be allocated.

The paper is marked out of 100.

Candidates must attempt **ALL** questions.

In any questions on this paper asking you to produce code requiring a user input, you are not required to check that the input provided is of the desired form unless the question requests it.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

First Year Examinations 2017

MATHEMATICAL SKILLS

Time allowed: 1 hour 30 minutes

The paper consists of 20 questions. All questions carry equal weight (5 marks each).

Candidates should attempt all questions.

You must show all your working for each question to get full marks.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

First Year Examinations 2017

FINANCIAL MATHEMATICS

Time allowed: 3 hours

The following items are provided:

Formulae and tables for examinations of the Institute and Faculty of Actuaries

The paper consists of **EIGHT** questions.

Candidates must answer **ALL** questions

The questions are **NOT** of equal weight:

The marks in brackets provide an indication of the proportion of the total marks for the paper which will be allocated.

Candidates are permitted to bring into the examination room:

Financial calculator – one of the following models **only**:

- Texas Instruments BAI Plus (including the BAI Plus Professional)
- Hewlett Packard (HP) 12c (including the 12c Platinum, 12c Platinum 25th Anniversary Edition, 12c 30th Anniversary Edition and 12c Prestige)

AND

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

First Year Examinations 2017

DISCRETE MATHEMATICS

Time allowed: 1 hour 30 minutes

This paper consists of NINE questions
Candidates must answer ALL questions
The questions are NOT of equal weight:
There are 150 marks available on the paper with marks for individual questions given in brackets by each question

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator.
Do not communicate in any way with any other candidate in the examination room.
Do not open the question paper until told to do so.
All answers must be written in the answer book(s) provided.
All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked.
At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

First Year Examinations 2017

NUMERICAL METHODS AND COMPUTATION

Time allowed: 1 hour 30 minutes

This paper consists of EIGHT questions

Candidates must answer ALL questions

The questions are NOT of equal weight

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator.
Do not communicate in any way with any other candidate in the examination room.
Do not open the question paper until told to do so.
All answers must be written in the answer book(s) provided.
All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked.
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UNIVERSITY OF ESSEX

Second Year Examinations 2017

INTRODUCTION TO QUANTITATIVE MANAGEMENT

Time allowed: 2 hours.

The paper consists of five questions.

Candidates must answer all questions.

Each question is marked out of 20. Marks for each part are shown.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Second Year Examinations 2017

LINEAR ALGEBRA

Time allowed: 2 hours.

This paper consists of **ELEVEN** questions

Candidates must answer **ALL** questions

The questions are **NOT** of equal weight:

The percentages in brackets provide an indication of the proportion of the total marks for the paper which will be allocated.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Second Year Examinations 2017

REAL ANALYSIS

Time allowed: 2 hours.

This paper consists of **FIVE** questions

Candidates must answer **ALL** questions

The questions are **NOT** of equal weight:

The percentages in brackets provide an indication of the proportion of the total marks for the paper which will be allocated.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Second Year Examinations 2017

OPTIMISATION (LINEAR PROGRAMMING)

Time allowed: 2 hours.

The following items are provided:

Graph Paper

The paper consists of **four** questions. Candidates may attempt any number of questions. Your best **three** answers will be used for assessment.

Each question is marked out of 100. Part (a) of each question allows for up to 50 marks to be obtained. However marks for part (a) will be capped at 40. The remaining part(s) have a total of 60 marks available for them, and are not capped.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Second Year Examinations 2017

MATHEMATICAL METHODS

Time allowed: 2 hours.

The paper consists of five questions.

Candidates must attempt ALL questions.

Each question is worth 20 marks in total.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator.

Do not communicate in any way with any other candidate in the examination room.

Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Second Year Examinations 2017

STATISTICS II

Time allowed: 2 hours.

At the end of the paper are statistical tables.

The paper consists of TEN questions.

Candidates must answer ALL questions.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

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UNIVERSITY OF ESSEX

Second Year Examinations 2017

INTRODUCTION TO NUMERICAL METHODS

Time allowed: 2 hours.

The paper consists of four questions.

Candidates must answer all questions.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Second Year Examinations 2017

VECTOR CALCULUS

Time allowed: 2 hours.

The paper consists of four questions. Candidates may attempt any number of questions. Your best three answers will be used for assessment.

Each question is marked out of 100. Part (a) of each question allows for up to 50 marks to be obtained. However marks for Part (a) will be capped at 40. The remaining part(s) have a total of 60 marks available for them, and are not capped.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

2nd Year Examinations 2017

FINANCE AND FINANCIAL REPORTING

Time allowed: 3 hours

The following items are provided:

Formulae and tables for examinations of the Institute and Faculty of Actuaries

The paper consists of **EIGHT** questions.
Candidates must answer **ALL** questions.
The questions **ARE NOT** of equal weight.

Candidates are permitted to bring into the examination room:

Financial calculator – one of the following models **only**:

- Texas Instruments BAI Plus (including the BAI Plus Professional)
- Hewlett Packard (HP) 12c (including the 12c Platinum, 12c Platinum 25th Anniversary Edition, 12c 30th Anniversary Edition and 12c Prestige)

AND

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked.

At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Second Year Examinations 2017

CONTINGENCIES I

Time allowed: 2 hours

The following items are provided:

Formulae and tables for examinations of the Institute and Faculty of Actuaries

This paper consists of **SEVEN** questions and is marked out of 100. The percentages in brackets provide an indication of the proportion of the total marks for the paper which will be allocated.

Candidates must answer **ALL** questions

The questions are **NOT** of equal weight.

Candidates should note that marks are awarded for correct intermediate formulae and workings.

Please start each question on a new page.

Candidates are permitted to bring into the examination room:

Financial calculator – one of the following models **only**:

- Texas Instruments BAI Plus (including the BAI Plus Professional)
- Hewlett Packard (HP) 12c (including the 12c Platinum, 12c Platinum 25th Anniversary Edition, 12c 30th Anniversary Edition and 12c Prestige)

AND

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

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At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

2nd Year Examinations 2017

SURVIVAL ANALYSIS

Time allowed: 3 hours

The following items are provided:

Statistical tables (at the end of the question paper)

The paper consists of 10 questions. Candidates must answer all questions.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

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At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Second Year Examinations 2017

THE LAWS OF PHYSICS

Time allowed: 1 hour 30 minutes

The paper consists of three questions.

Answer TWO questions.

All questions carry equal weight.

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Second Year Examinations 2017

QUANTUM MECHANICS

Time allowed: 2 hours

The paper consists of two parts.

Candidates should answer one question from Part A and one question from Part B.

Candidates may attempt both questions in both parts, but the best answers from Part A and Part B will be used for assessment.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked.

At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Third Year Examinations 2017

COMPLEX VARIABLES AND APPLICATIONS

Time allowed: 2 hours.

The paper consists of TEN questions.

Candidates must answer ALL questions.

Each question is marked out of 10.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Third Year Examinations 2017

ORDINARY DIFFERENTIAL EQUATIONS

Time allowed: 2 hours.

The paper consists of **five** questions, each marked out of 20.

Candidates must answer **all** questions.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Third Year Examinations 2017

NONLINEAR PROGRAMMING

Time allowed: 2 hours.

The paper consists of four questions. Candidates may attempt any number of questions. Your best three answers will be used for assessment.

Each question is marked out of 100. Part (a) of each question allows for up to 50 marks to be obtained. However marks for part (a) will be capped at 40. The remaining part (s) have a total of 60 marks available for them, and are not capped.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Third Year Examinations 2017

COMBINATORIAL OPTIMISATION

Time allowed: 2 hours.

The following items are provided:

Graph Paper

The paper consists of four questions. Candidates may attempt any number of questions. Your best three answers will be used for assessment.

Each question is marked out of 100. Part (a) of each question allows for up to 50 marks to be obtained. However marks for Part (a) will be capped at 40. The remaining Part(s) have a total of 60 marks available for them, and are not capped.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked. At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Third Year Examinations 2017

MATHEMATICS OF PORTFOLIOS

Time allowed: 2 hours.

The paper consists of **SIX** questions.

Candidates must answer ALL questions.

The questions are not of equal weight.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked.

At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Third Year Examinations 2017

CONTINGENCIES II

Time allowed: 2 hours

The following items are provided:

Formulae and tables for examinations of the Institute and Faculty of Actuaries

This paper consists of EIGHT questions and is marked out of 100. The percentages in brackets provide an indication of the proportion of the total marks for the paper which will be allocated.

Candidates must answer ALL questions

The questions are NOT of equal weight.

Candidates should note that marks are awarded for correct intermediate formulae and workings.

Please start each question on a new page.

Candidates are permitted to bring into the examination room:

Financial calculator – one of the following models **only**:

- Texas Instruments BAII Plus (including the BAII Plus Professional)
- Hewlett Packard (HP) 12c (including the 12c Platinum, 12c Platinum 25th Anniversary Edition, 12c 30th Anniversary Edition and 12c Prestige)

AND

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

Please do not leave your seat unless you are given permission by an Invigilator. Do not communicate in any way with any other candidate in the examination room. Do not open the question paper until told to do so. All answers must be written in the answer book(s) provided. All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked.

At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

UNIVERSITY OF ESSEX

Third Year Examinations 2017

GRAPH THEORY

Time allowed: 2 hours.

The paper consists of four questions.

Candidates may attempt any number of questions.

Your best three answers will be used for assessment.

Each question is marked out of 100. Part (a) of each question allows for up to 50 marks to be obtained. However marks for Part (a) will be capped at 40. The remaining part(s) have a total of 60 marks available for them, and are not capped.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

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UNIVERSITY OF ESSEX

Third Year Examinations 2017

CRYPTOGRAPHY AND CODES

Time allowed: 2 hours.

The paper consists of four questions.

Candidates may attempt any number of questions.

Your best three answers will be used for assessment.

Each question is marked out of 100. Part (a) of each question allows for up to 50 marks to be obtained. However marks for Part (a) will be capped at 40. The remaining Part(s) have a total of 60 marks available for them, and are not capped.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

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UNIVERSITY OF ESSEX

Third Year Examinations 2017

MODELLING EXPERIMENTAL DATA

Time allowed: 3 hours

The paper consists of six questions.

Candidates must answer all questions.

The questions are not equally weighted.

Formulae and tables are provided at the end of the question paper.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

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UNIVERSITY OF ESSEX

3rd Year Examinations 2017

STATISTICAL METHODS

Time allowed: 3 hours

The paper consists of NINE questions.

Candidates must answer ALL questions.

The questions are NOT of equal weight.

The total marks are 100.

Useful distribution densities are provided at the end of the question paper.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

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UNIVERSITY OF ESSEX

Third Year Examinations 2017

STOCHASTIC PROCESSES

Time allowed: 3 hours

The following items are provided:

Graph paper

The paper consists of ten questions.
Candidates must answer **ALL** questions.
The questions are not all of equal weight.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

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UNIVERSITY OF ESSEX

Third Year Examinations 2017

FINANCIAL DERIVATIVES

Time allowed: 2 hours

The following items are provided:

Gaussian Tables (at the end of the question paper)

The paper consists of NINE questions.

Candidates must answer ALL questions.

The questions are NOT of equal weight.

The marks in brackets provide an indication of the proportion of the total marks for the paper which will be allocated.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

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UNIVERSITY OF ESSEX

3rd Year Examinations 2017

APPLIED STATISTICS

Time allowed: 3 hours

The following items are provided:

Formulae and tables (at the end of the question paper)

The paper consists of FOUR questions.

Candidates must answer all questions.

The questions are equally weighted.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

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- Casio FX-85GT PLUS

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UNIVERSITY OF ESSEX

3rd Year Examinations 2017

BAYESIAN COMPUTATIONAL STATISTICS

Time allowed: 3 hours

The paper consists of TEN questions.

Candidates must answer ALL questions.

The questions are NOT of equal weight.

The total marks are 100.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

- Casio FX-83GT PLUS
- Casio FX-85GT PLUS

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UNIVERSITY OF ESSEX

3rd Year Examinations 2017

PARTIAL DIFFERENTIAL EQUATIONS

Time allowed: 2 hours

The following items are provided:

Useful formulae (at the end of the question paper)

The paper consists of 5 questions.

Candidates must answer all questions.

Each question is marked out of 20.

Candidates are permitted to bring into the examination room:

Scientific calculator – one of the following models **only**:

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- Casio FX-85GT PLUS

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UNIVERSITY OF ESSEX

Third Year Examinations 2017

MATHEMATICAL BIOLOGY

Time allowed: 2 hours.

The paper consists of four questions.

Candidates may attempt any number of questions.

Your best three answers will be used for assessment.

Each question is marked out of 100. Part (a) of each question allows for up to 50 marks to be obtained. However marks for part (a) will be capped at 40. The remaining part(s) have a total of 60 marks available for them, and are not capped.

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