Oxford Mathematics

Andrew Wiles Building
Radcliffe Observatory Quarter
Woodstock Road
Oxford OX2 6GG
United Kingdom

+44 (0)1865 615205
acadadmin@maths.ox.ac.uk
www.maths.ox.ac.uk

University of Oxford
Mathematical Institute

FINAL HONOUR SCHOOL OF MATHEMATICS

PART A 2025

First Notice to Candidates

This Notice gives details of second year examinations in Mathematics.

- The full regulations for the Part A examination are contained in the Examination Decrees and Regulations. Full particulars about the syllabus and other information can be found on the Mathematical Institute's website: https://www.maths.ox.ac.uk/members/students/undergraduate-courses
- A note about examination conventions relating to the marking of papers in Part A is attached. Your marks will be reported to you in the University's standard format which consists of a mark in the range 0-100 for each paper.
- The timetable for the examination will be set by the Examination Schools and will be made available to you through Student Self Service. Timetabling is an extremely complicated process and once the timetable is published it cannot be changed. If you are unable to take a paper at the stipulated time for a religious or other compelling reason, you should ask your college to make the appropriate application on your behalf. Please do not ask the examiners; they do not have authority to act on such matters.
- A Second Notice will be sent out later with information about practical arrangements in the Examination Schools, including use of candidate numbers, handing in of scripts and so on.

Prof. Zhongmin Qian
Chair of Part A Examiners
Mathematical Institute
February 2025

Part A 2025 Mathematics:
Marking of papers

University Standardised Marks

Although the Part A Examination is an unclassified examination, marks for each individual examination paper will be reported as University Standardised Marks (USMs). The object of the USMs is to allow direct comparison between the results of examination in different subjects. Raw marks may be turned into USMs by scaling, sometimes necessary to ensure that all papers are fairly and equally rewarded. The correspondence between the USM ranges and classes is as follows:

- 70-100: First Class
- 60-69: Upper Second Class
- 50-59: Lower Second Class
- 40-49: Third Class
- 30-39: Pass
- 0-29: Fail

Format of Examination Papers

In Part A, there are three core papers A0, A1, A2, nine papers A3-A11 relating to the long options, and paper ASO relating to the short options. Paper A2 is of 3 hours' duration, as it includes both A2.1 Metric Spaces and A2.2 Complex Analysis, whilst the remaining papers are 1.5 hours' duration.

You are required to offer Papers A0, A1, A2 and ASO, and *five or six* papers from A3-A11. In all papers, each question is worth 25 marks and you may submit attempts to as many questions as you wish.

Paper A0 Linear Algebra and A1 Differential Equations 1
These are core papers, and each paper contains 3 questions. The best two answers will count towards the total mark for the paper.

Paper A2

Section A – A2.1 Metric Spaces
This section includes three questions. The best two answers will count towards the total mark for the paper.

Section B – A2.2 Complex Analysis
This section includes three questions. The best two answers will count towards the total mark for the paper.

Papers A3-A11: Long Options
Each of the nine **Long Options Papers** contain three questions, with the best two answers counting towards a candidate's total mark for the paper.

The Long Options refer to the following papers:

A3: Rings and Modules
A4: Integration
A5: Topology
A6: Differential Equations 2
A7: Numerical Analysis
A8: Probability
A9: Statistics
A10: Fluids and Waves
A11: Quantum Theory

Paper ASO: Short Options
This core paper contains a single question on each of the Short Options. The best two answers will count towards the total mark for the paper.

The questions will be numbered according to the following scheme:

1. Number Theory
2. Group Theory
3. Projective Geometry
4. Integral Transforms
5. Calculus of Variations
6. Graph Theory
7. Mathematical Modelling in Biology

Calculators

The use of calculators will not be permitted in these examinations.

Marking of Papers

Questions on all papers will be marked out of 25. Mark schemes will aim to ensure that the following qualitative criteria hold:

20-25 marks: A completely, or almost completely, correct answer, showing excellent understanding of the concepts and skill in carrying through the arguments and/or calculations; minor slips or omissions only.

13-19 marks: A good though not complete answer, showing understanding of the concepts and competence in handling the arguments and/or calculations. Such an answer might consist of an excellent answer to a substantial part of the question, or a good answer to the whole question which nevertheless shows some flaws in calculation or in understanding or in both.

7–12 marks: Standard material has been substantially and correctly answered with some possible minor progress on to other parts of the question.

0–6 marks: Some progress has been made with elementary, accessible material.

This should be regarded as a guide conveying the intentions of the examiners.

Classification Conventions

At the end of the Part A examination, a candidate will be awarded a University Standardised Mark (USM) for each of the papers offered. The Examiners may scale the raw marks to arrive at the USMs reported to candidates.

When scaling the raw marks on a paper the examiners will consider the following:

- the total sum of the marks for all questions on the paper, subject to the rules above on numbers of questions answered.
- the relative difficulty of the paper compared to the other Part A papers.
- the report submitted by the assessor who set and marked the paper.

Examiners will use their academic judgement to ensure that appropriate USMs are awarded and may use further statistics to check that the marks assigned fairly reflect the students' performances on a paper.

The USMs awarded to a candidate for the papers offered in Part A will be carried forward into a classification as described below. Paper A2 will have twice the weight of Papers A0, A1, A3-A11 and ASO in this calculation. For candidates who have opted to offer 6 long options (papers A3-A11), the two lowest scoring long option papers will be given a weight of 0.5. **Part A is not classified separately**.

Qualitative Class Descriptors

The average USM ranges used in the classifications reflect the following general Qualitative Class Descriptors agreed by the Teaching Committee:

First Class: the candidate shows excellent skills in reasoning, deductive logic and problem-solving. They demonstrate an excellent knowledge of the material, and can use that in unfamiliar contexts.

Upper Second Class: the candidate shows good or very good skills in reasoning, deductive logic and problem-solving. They demonstrate a good or very good knowledge of much of the material.

Lower Second Class: the candidate shows adequate basic skills in reasoning, deductive logic and problem-solving. They demonstrate a sound knowledge of much of the material.

Third Class: the candidate shows reasonable understanding of at least part of the basic material and some skills in reasoning, deductive logic and problem-solving.

Pass: the candidate shows some limited grasp of at least part of the basic material.
[Note that the aggregation rules in some circumstances allow a stronger performance on some papers to compensate for a weaker performance on others.]

Fail: little evidence of competence in the topics examined; the work is likely to show major misunderstanding and confusion, coupled with inaccurate calculations; the answers to questions attempted are likely to be fragmentary only.

Extracts from Examination Conventions 2024-25. Full text available online at
https://www.maths.ox.ac.uk/members/students/undergraduate-courses/examinations-assessments/examination-conventions