

# Mathematics and Statistics Parts A, B and C: Examination Conventions 2011–12

Department of Statistics  
Academic Committee

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## 1 Introduction

This document establishes the examining conventions for Parts A, B and C of the Honour School of Mathematics and Statistics. Although the main part of this document is written explicitly for candidates, it provides, in one place, information for candidates, assessors and examiners. The appendices contain additional information, primarily for examiners.

Nothing contained in this document supersedes the University's regulations and policy set out in the current *Examination Regulations*, the *Notes for the Guidance of Examiners and Chairmen of Examiners* (from the Proctors) and the *Notes of Guidance on Examinations and Assessment* (from EPSC).

The Academic Committee of the Department of Statistics *directs* that examinations for which it is responsible are conducted in accordance with these conventions. The Board of Examiners may make minor deviations from these conventions in exceptional circumstances, ideally after reference to the Academic Committee or the Proctors.

## 2 Information from the Course Handbook

Mathematics and Statistics students take *Honour Moderations in Mathematics* at the end of their first year. Full details of this examination are in the *Handbook for the Undergraduate Mathematics Courses* and Examination Conventions published by the Mathematical Institute.

Sections 2.1–2.6 below are taken unchanged from the *Mathematics and Statistics Undergraduate Handbook*.

### 2.1 Examinations

It is by passing the University's 'public' examinations that you qualify for your degree.

The first public examination, called Honour Moderations (or 'Mods'), is at the end of the first year. You have to pass Mods, or a later re-sit examination called Prelims, to enter the second year of the course.

The second public examination is the Final Honour School (or 'Finals'). In contrast to Mods, there is a separate Final Honour School for Mathematics and Statistics students (i.e. it is different to that for single subject Mathematics). If you take the three year BA course, you will take Part A of the examination at the end of your second year and Part B at the end of your third year. If you take the MMath course, the second and third year will be the same as the BA, and you will also take Part C at the end of your fourth year.

For students starting Part C in October 2012 and earlier, in order to proceed to Part C, they must have achieved at least Lower Second Class Honours standard in Parts A and B together, that is, in the classification at the end of Part B described in Section 2.5.

**For students starting Part C in October 2013 and later, in order to proceed to Part C, they must have achieved at least Upper Second Class Honours standard in Parts A and B together, that is, in the classification at the end of Part B described in Section 2.5.**

## 2.2 Classification

The possible classes are: First (I), Upper Second (Iii), Lower Second (Iii), Third (III), Pass, Fail.

### 2.2.1 Mods

Following the Mods examination you will be awarded a classification. In Mods the Second Class is not split into Upper and Lower Seconds, so the possible classes are: First (I), Second (II), Third (III), Pass, Fail.

### 2.2.2 Parts A, B and C

Following the Part B examination you will be awarded a classification based on your performance in Parts A and B together. So if you take the three year course, your classification for the BA is the one that you are awarded after Part B.

If you continue to Part C, following the Part C examination you will be awarded a second classification based on your performance in Part C only. So if you take the four year course, you have two classifications for the MMath: one classification for your performance in Parts A and B together, and a second classification for your performance in Part C.

A Pass will not be awarded in Part C. If you do not achieve at least Third Class in Part C, then you are not eligible for an MMath but instead you should be eligible for a BA with the appropriate class as determined by your performance on Parts A and B.

Note that your Mods performance does not contribute to your classification after Parts A and B, or Part C.

### 2.2.3 Qualitative descriptors

The qualitative descriptions of the classes are as follows:

**Class I** The candidate shows excellent skills in reasoning, deductive logic and problem-solving. He/she demonstrates an excellent knowledge of the material, and is able to use that in unfamiliar contexts.

**Class Iii** The candidate shows good or very-good skills in reasoning, deductive logic and problem-solving. He/she demonstrates a good or very good knowledge of much of the material.

**Class Iii** The candidate shows adequate basic skills in reasoning, deductive logic and problem-solving. He/she demonstrates a sound knowledge of much of the material.

**Class III** 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 the questions attempted are likely to be fragmentary only.

## 2.3 Standardised marks

For each examination paper you take, and each mini-project/dissertation, your performance will be reported in the form of a university standardised mark in the range 0–100. The correspondence between the standardised mark 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.

In order to arrive at such standardized marks for each paper, the examiners will mark and assess papers in the way described in Section 3. (Marks for formally assessed course work will be similarly standardised.)

## 2.4 Double marking

For the mathematics and statistics examination papers that you take, there is a precise model solution and marking scheme approved by the examiners for every question. Your answers will be marked by an examiner or assessor. Your answers will also be checked independently (not necessarily by an examiner or assessor) to ensure that all parts have been marked and the marks and part-marks have been correctly totalled and recorded.

Dissertations are not covered by the above paragraph: these will be marked independently by two examiners or assessors. If a mini-project has a precise model solution, it will be marked by an examiner or assessor and also checked independently (as for examination papers); otherwise it will be marked independently by two examiners or assessors.

## 2.5 Classification after Part B

Your classification after Part B is based on your four Part A papers and your four Part B papers (or their equivalent).

### 2.5.1 Weight given to each paper

Your Part A performance is 40% of the classification after Part B and your Part B performance is the other 60%, as follows.

Each Part A paper has a weight of 2 and each Part B paper has a weight of 3 (and each half paper in Part B has a weight of 1.5). So the total weight of the eight papers over the two years is  $4 \times 2 + 4 \times 3 = 20$ . If  $A_1, A_2, A_3, A_4$  are your four standardised marks on

the Part A papers, and  $B_1, B_2, B_3, B_4$  are your four marks on four Part B papers, then your average university standardised mark is

$$AvUSM = \frac{2(A_1 + A_2 + A_3 + A_4) + 3(B_1 + B_2 + B_3 + B_4)}{20}.$$

If in Part B you take two half papers and get marks  $B_5$  and  $B_6$  (both in the range 0–100) in place of  $B_4$ , then your  $AvUSM$  is given by replacing  $B_4$  in the above formula by  $\frac{1}{2}(B_5 + B_6)$  (with similar modifications if you take further half papers).

### 2.5.2 Classification conventions

From the 2009 examinations and onwards, the classification after Part B is not determined solely by your  $AvUSM$ : there is also a *Strong Paper rule*.

In Parts A and B you take 8 papers (or their equivalent). To satisfy the  $n$ th class strong paper rule:

- you need at least 3 papers (or their equivalent) to have a mark of the  $n$ th class standard or above,
- and you also need at least one of these papers (or the equivalent) to be in Part B.

For example, to satisfy the First class strong paper rule you need at least 3 papers with marks of 70 or above with at least one of these papers being in Part B.

Classifications are determined as follows:

- First Class:  $AvUSM \geq 70$  and the first class strong paper rule is satisfied.
- Upper Second Class: EITHER  $AvUSM \geq 70$  and the first class strong paper rule is not satisfied  
OR  $60 \leq AvUSM < 70$  and the upper second strong paper rule is satisfied.
- Lower Second Class: EITHER  $60 \leq AvUSM < 70$  and the upper second strong paper rule is not satisfied  
OR  $50 \leq AvUSM < 60$  and the lower second strong paper rule is satisfied.
- Third Class: EITHER  $40 \leq AvUSM < 50$   
OR  $50 \leq AvUSM < 60$  and the lower second strong paper rule is not satisfied.
- Pass:  $30 \leq AvUSM < 40$ .
- Fail:  $AvUSM < 30$ .

## 2.6 Part C classification

Your Part C classification is based on Part C alone.

### 2.6.1 Weight given to each paper

The dissertation has a weight of 1 and each half unit has a weight of  $\frac{1}{2}$ . If  $C_D$  is your dissertation standardised mark and  $C_1, C_2, C_3$  and  $C_4$  are your standardised marks on your four further half units (all of  $C_D, C_1, \dots, C_4$  being in the range 0–100), then your average university standardised mark in Part C is

$$AvUSMC = \frac{C_D + \frac{1}{2}(C_1 + C_2 + C_3 + C_4)}{3}.$$

## 2.6.2 Classification conventions

Classifications are determined as follows:

- First Class:  $AvUSMC \geq 70$ .
- Upper Second Class:  $60 \leq AvUSMC < 70$ .
- Lower Second Class:  $50 \leq AvUSMC < 60$ .
- Third Class:  $40 \leq AvUSMC < 50$ .

A Pass will not be awarded in Part C. If you achieve  $AvUSMC < 40$  then you are not eligible for an MMath but instead you should be eligible for a BA with the appropriate class as determined by your performance on Parts A and B.

## 3 Further details

### 3.1 Structure of papers and marking criteria

#### 3.1.1 Part A

In Part A, all candidates take papers AC1, AC2, AS1 and AS2. Questions on AC1 and AS1 are shorter and will be marked out of 10, while questions on AC2 and AS2 are longer and will be marked out of 25. Papers AC1 and AC2 will each have three sections – on Algebra, Analysis and Differential Equations – with 3 questions in each section on each paper.

AC1: You should attempt all 9 questions on paper AC1.

AC2: Your best answer from each section of the paper, and your best other answer, will count for your total mark.

AS1: On paper AS1 there will be 3 questions on Probability, 3 questions on Statistics, and otherwise 1 question for each 8-lecture course and 2 questions for each 16-lecture course. Your best 5 answers on Probability and Statistics, and your best 4 answers on other sections, will count for your total mark.

AS2: On paper AS2 there will be 1 question for each 8-lecture course and 2 questions for each 16-lecture course. Your best 2 answers on Probability and Statistics, and your best 2 other answers (which may include further answers on Probability and Statistics), will count for your total mark.

Marking schemes for questions out of 10 will aim to ensure that the following qualitative criteria hold:

9–10 marks: A completely or almost completely correct answer, showing good understanding of the concepts and skill in carrying through arguments and calculations; minor slips or omissions only.

5–8 marks: A good though not complete answer, showing understanding of the concepts and competence in handling the arguments and calculations.

Marking schemes for questions out of 25 will aim to ensure that the following qualitative criteria hold:

20–25 marks: A completely or almost completely correct answer, showing good understanding of the concepts and skill in carrying through arguments and 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.

### **3.1.2 Part B**

Half paper: Each half unit paper will last  $1\frac{1}{2}$  hours and consist of 3 questions. You may hand in as many answers as you wish and your best 2 answers will count for your total mark.

Full paper: Each full unit paper will last 3 hours and consist of two sections, with 3 questions in each section. You may hand in as many answers as you wish and your best 2 answers from each section will count for your total mark.

Questions will be marked out of 25. Marking schemes will aim to ensure that qualitative criteria given in Section 3.1.1, for questions out of 25, hold.

Paper BS1: The exception to the above is paper BS1 which will be examined via a 2-hour paper plus assessed practical assignments. The paper will consist of 3 questions on BS1a and 2 questions on BS1b. You may hand in as many answers as you wish. Your best 2 answers from BS1a and your best answer from BS1b will count for your total mark. Each question will be marked out of 22 and the assessed practical component will be marked out of 34.

### **3.1.3 Part C**

Half paper: Each half unit paper will last  $1\frac{1}{2}$  hours and consist of 3 questions. You may hand in as many answers as you wish and your best 2 answers will count for your total mark.

Full paper: Each full unit paper will last 3 hours and consist of two sections, with 3 questions in each section. You may hand in as many answers as you wish and your best 2 answers from each section will count for your total mark.

Questions will be marked out of 25. Marking schemes will aim to ensure that qualitative criteria given in Section 3.1.1, for questions out of 25, hold.

Some courses are examined by mini-project. This will normally be prescribed in the Course Handbook (including the Syllabus and Synopses). Where a topic is assessed by a mini-project, the mini-project should be designed to take a typical student about three days. You are not permitted to withdraw from being examined on a topic once you have submitted your mini-project to the Examination Schools.

### **3.1.4 Part C dissertations**

Dissertations will be marked according to the same principles as examination papers. Marks will be awarded in the following proportions:

- Mathematics/Statistics or Data analysis/simulation 50%
- Content 25%
- Presentation 25%.

*Mathematics/Statistics:* Proofs and assertions should all be correct, written in your own words, and illustrated using your own worked examples. In applied topics, the derivation of the model should be properly justified.

*Data analysis/simulation:* The data analysis has to be correctly and suitably done, including the choice of model. Similar comments apply to simulation.

*Content:* You must do more than rehash text books and lecture notes. You should use multiple original sources, and present the material in your own words with your own critical overview. The Examiners are looking for your thoughts and contributions.

*Presentation:* The mathematics must be clear and well laid out; formulae must be clearly presented, tables and graphs properly referenced in the text; an abstract and a bibliography must be provided; the English should be clear and grammatically correct. Give some thought to notation, choice of typeface, and numbering of equations and sections. Do not fail to number the pages. Finally, be sure to supply complete and accurate references for all the sources used in completing the project, and be sure to cite them properly in the text.

[The Course Handbook, and especially the supplement *Part C Dissertations in Statistics: Guidance Notes*, gives detailed advice on correct referencing, and the seriousness of plagiarism.]

### 3.2 Reconciliation procedures when work is double-marked

Each dissertation will be marked independently by two examiners or assessors (neither of who will be the dissertation supervisor). When the two marks for a dissertation are less than 10 USMs apart, the two marks will be averaged. In the other cases, there will be a discussion between the two examiners or assessors concerned, after which it will normally be possible for a mark to be agreed. In any exceptional cases a third examiner or assessor will normally read the dissertation before the Examiners agree a mark. The same reconciliation procedure will be used when mini-projects are double-marked.

### 3.3 Penalties for late or non-submission of coursework

Rules governing late submission and any consequent penalties are set out in the ‘Late submission of work’ sub-section of the ‘Regulations for the Conduct of University Examinations’ section of the Examination Regulations.

Under the provisions permitted by the regulations, late submission of coursework for Mathematics and Statistics examinations will normally result in the following penalties:

- With permission from the Proctors under clause (2) of para 16.8, no penalty.
- With permission from the Proctors under clauses (3) + (4) of para 16.8, a penalty of a reduction in the mark for the coursework in question of at least 5 USMs (or at least 5% of the maximum mark available for the piece of work); the exact penalty to be set by the Examiners with due consideration to the advice given in the document ‘Academic Penalties for Late Submission of a thesis or other exercise: Proctors Notes for Guidance’, dated 1/11/06.

- Where the candidate is not permitted by the Proctors to remain in the examination he or she will be deemed to have failed the examination as a whole.
- Where no work is submitted or it is proffered so late that it would be impractical to accept it for assessment the Proctors may, under their general authority, and after (i) making due enquiries into the circumstances and (ii) consultation with the Chairman of the Examiners, permit the candidate to remain in the examination. In this case the Examiners will award a mark of zero for the piece of coursework in question.

### **3.4 Mark rescaling**

As in Section 2.3, for each examination paper you take, your performance on the paper will be reported in the form of a University Standardised Mark (USM) in the range 0–100.

#### **3.4.1 Part A**

The Examiners may rescale the raw marks to arrive at the four USMs reported to candidates. In arriving at this rescaling, the examiners will principally take into account candidates' total raw marks on each paper (subject to the rubric of each paper). The Examiners will aim to ensure that all papers and all subjects within a paper are fairly and equally rewarded, but if in any case a paper, or a subject within a paper, appears to have been problematic, then the Examiners may take account of this in calculating USMs. Should the Examiners judge it necessary, they can use different rescalings on papers AS1 and AS2 from those used on the related Mathematics papers AO1 and AO2.

#### **3.4.2 Parts B and C**

The Examiners will assign USMs for full unit and half unit papers taken in Parts B and C and may rescale the raw marks to arrive at the USMs. The Examiners will take into account the relative difficulty of papers when assigning USMs. In order to do this, the Examiners may use information on candidates' performances on the earlier Part(s) of the examination when rescaling the raw marks. They may also use other statistics to check that the USMs fairly reflect the performances on a paper.

#### **3.4.3 Parts A, B and C**

In order to ensure fair treatment of all candidates, the Examiners may exercise individual consideration in assigning USMs for candidates whose marks lie outside the standard pattern, or when assigning USMs to papers that are untypical or for which the number of candidates involved is small.

The Examiners may also take into account reports from the markers of questions when rescaling the raw marks.

The object of the USM is to allow direct comparison between the results of examinations in different subjects. This means that the USM will not correspond to the raw mark. In the case of mathematics the conversion tends to exaggerate small differences at the top and bottom end of the scale. It is usually true that USM conversion makes the performance of a weak candidate appear better than the raw marks would suggest. It is often, but not always, true that the effect is reversed for strong candidates.

## A Additional information for examiners

### A.1 Documentation

The MPLS Division has agreed a list of documents that, as standard, should be sent to external examiners on their appointment. Chairmen of Examiners should ensure that these documents are sent to external examiners by the departmental administration. Chairmen of Examiners will need to help with the second item on the list. The Internal Examiners should also ensure that they have access to these documents. The list is:

- The Statement on the Role of External Examiners in the MPLS Division.
- An outline timetable of the examination board, indicating when the External Examiners would receive draft papers, etc.
- The examination regulations for the exam concerned.
- The examination conventions for the examination in question, and associated conventions for previous or subsequent examinations.
- The *Notes for the Guidance of Examiners and Chairmen of Examiners* published by the Proctors Office.
- The EPSC *Notes of Guidance on Examinations and Assessment*.
- The *Course Handbook*, including the syllabus for each lecture course.
- The examination papers from the preceding two years.
- The Examiners' reports on these examinations (internal and external).
- The responses made to those examination reports, from the departmental academic committee and in particular the letters from the Division to the external examiners.
- The published tables of class percentage figures for the last two years (as published in the Examiners' reports).

Chairmen may also find helpful the Proctors' Office Step-by-Step Guide available at <http://www.admin.ox.ac.uk/proctors/oxonly/examiners.shtml>.

### A.2 Setting the papers

In setting the papers, Examiners should be guided by the style of papers set in previous years, together with the Examiners' reports. Questions on each subject within a paper will normally be set and marked by the course lecturer, who should be appointed as an Assessor.

Examiners and assessors should attempt to set papers that do not require too much rescaling. Any rescaling function with a steep gradient has the effect of magnifying imperfections in the marking scheme.

#### Protocol

The following protocol should be followed for the setting of each paper.

1. Questions on each subject within the paper will be set by the Assessor.

2. These will then be checked by an examiner, or another suitably competent member of academic staff.
3. The final draft of the paper will be reviewed and approved by the whole examining board.

A checklist that may be given to assessors is attached as Annexe B.

The External Examiner should be consulted according to the agreed timetable and provided with draft papers, annotated solutions and marking schemes. The Examiners should not finalise any paper without taking into account the comments of the External Examiner. The External Examiner's advice should either be followed in whole or in part, or explicitly rejected, and in all cases the External should be informed in writing what has been done in response to his/her advice.

### **Model solutions and marking schemes**

Assessors must be asked to provide complete model solutions, annotated so as to indicate what is considered bookwork, what has been seen before on problem sheets, and what is considered to be new and unseen, together with a draft marking scheme for the approval of the Examiners. Each solution, with additional comments, should also make clear how much of the question is accessible to weaker candidates.

Questions for paper AS1 in Part A (marked out of 10) should be relatively easy and very straightforward and at a level that a lower second/third class student who knows the material can be expected to give an almost complete answer in no more than 12 minutes under examination conditions. It should be possible to write a complete answer in not much more than half a page.

For all other statistical examination questions, the marking scheme for each question should aim to ensure that weaker candidates can gain marks by answering the initial parts of the question, and stronger candidates can show the depth of their understanding in answering the later parts. As a guide, approximately 60% of each question should cover bookwork or straightforward material, and about 40% should be harder.

In Part C mini-projects, about 60% of the assignment should cover straightforward material to ensure that weaker candidates can gain marks, about 30% should be harder to allow stronger candidates to show the depth of their understanding, and about 10% should be very difficult, to distinguish the outstanding students.

The marking schemes should be approved by the Examiners alongside the papers. Examiners should check that questions are of a consistent difficulty within each paper and between papers, bearing in mind the standard criteria in 2.2.3 and 2.3.

### **Signing off the papers**

The versions of the questions on the finalised versions of the papers should be signed off as being suitable by the Chairman of Examiners, in consultation with assessors as appropriate, before the final papers are delivered to the Examination Schools.

## **A.3 Marking and checking scripts**

### **Marking**

The Marker for each subject will normally be the Assessor appointed to set that subject. Otherwise the marker should be an examiner or assessor. The Examiners should provide each marker with the approved marking scheme for the paper. Markers should be

instructed to follow the approved marking scheme consistently, and to carry out procedures for avoiding errors in transcription of the marks. A suitable checklist is attached as Annexe C.

Where a topic is assessed by mini-project, the anonymised assignments are marked by the course lecturer and moderated by the Examiners. Moderation is intended to ensure consistency and fairness across courses, and the Examiners may adjust marks, or take any other necessary steps, to achieve this goal.

The Chairman must ensure that those appointed as assessors are informed of the Examiners' timetables, and are made aware that they must be available for consultation by the Examiners until the signing of the Class/Pass Lists, and in particular during the input and checking of the marks.

## Checking

The Examiners should ensure that their procedures allow for:

- an independent arithmetic check of the correctness of the addition of the partial marks for each question
- an independent check of the marks entered into the database for each candidate
- an audit trail for these checks.

In recent years graduate students have been employed to carry out such checks, overseen by the Examiners.

## A.4 Mark rescaling

The critical task for examiners will be to translate the raw marks on each paper into University Standardised Marks (USMs) out of 100. In every case, this translation is done in the year that the paper is set and marked, and it is the USM and not the raw mark for the paper that is passed forward from the second to the third year to contribute to the Part B classification.

In producing USMs, Examiners are advised to follow advice given in the Examiners' Report from the previous year, along with their own judgement. It is appropriate to scale different papers in different ways so as to compensate for differences in difficulty. A quantitative description of the procedure, for each paper, for translating raw marks into USMs should be included in the Examiners' Report.

The Examiners will have asked markers for a report on the performance of candidates on each question and on each subject overall (see the checklist in Annexe C). In particular, markers should be invited to suggest where class boundaries could be drawn. The Examiners should consider these reports in their deliberations on mark rescaling.

Examiners will try to ensure that the rescaling is fair to all students. They should inspect a suitable sample of scripts. They may perform an initial mechanical rescaling, but will then consider whether this obtains fair results.

The Examiners should pay careful attention to what candidates have been told in the *Examination Regulations* and the *Course Handbook*, and should have regard to the percentages of candidates in each class in previous years, both in the same examination and across the University. Evidence of recent medical problems, etc., should be considered at this stage, and USMs adjusted if appropriate.

Examiners are reminded that, in order to ensure fair treatment, they may exercise individual consideration in assigning USMs for candidates whose marks lie outside the

standard pattern, or when assigning USMs to papers that are untypical or for which the number of candidates involved is small. The Examiners may judge that the rescaling they use should be substantially different from any initial mechanical rescaling that may have been generated as a starting point for their deliberations.

The class list must be compiled from the USMs without the exercise of further discretion on the part of examiners. The prescribed procedure is given in Section 2.

### **A.5 Medical certificates**

Proctorial guidance is that medical certificates should be kept if students are taking an examination with different parts in different years, in case the final Board of Examiners wants to refer to them at classification stage. This guidance is relevant to Part A and Part B Examiners.

If Part A examiners are presented with medical evidence affecting one paper they can take it into account and modify the USM for that paper accordingly. If Part A Examiners are presented with medical evidence affecting more than one paper and feel unable to modify USMs accordingly they should pass this information, along with the medical evidence, to the Board of Examiners in Part B the following year. The Part B Examiners can then take this evidence into account before making a classification. Once USMs have been issued to colleges at the end of Part A they cannot be altered so, in order to take such evidence into account, Part B examiners may have to suspend the examining conventions in awarding a classification.

### **A.6 Communication with candidates**

The Chairman of Examiners should write to candidates, reminding them of the general form and procedure for the examination. Letters to candidates from recent years are commended as examples to follow.

### **A.7 After the examination**

It will be helpful if Examiners will ensure that:

- Full Marking Schemes are deposited (after the examination is complete) in the Examiners' files, kept by Academic Administrator.
- LaTeX source files for the papers (incorporating any corrections) are kept for the electronic archive.

## B Checklist for setting papers

1. Is the question on the syllabus as defined by the *Course Handbook*? (Formally, the *Syllabus and Synopses* booklet is part of the Handbook.)
2. Is the question technically correct?
3. Is the notation and terminology standard or obvious? If not, is it defined within the question? Is it unambiguous? (Standard usage from the course is acceptable without explanation but phrases such as ‘as in the lectures’ should be avoided.)
4. Is it clear what may be assumed, what detail is required, and what would constitute a complete answer?
5. Is the form of presentation familiar/inviting/readable?
6. Does each question have an easy start, worth at least 10 marks, which examines material explicitly covered in the course? (Only relevant for 25-mark questions.)
7. Is each question, together with its mark scheme, such that a II(i)/II(ii) borderline candidate should be able to clock up 15/25 marks? (Only relevant for 25-mark questions.)
8. Can the question be done by stronger candidates in the appropriate time?
9. Are the questions as a whole fairly spread across the syllabus?
10. Are the questions as a whole of comparable standard to other questions this year and in recent years (taking into account comments in the Examiners’ reports)?
11. Are the questions as a whole of a similar general nature to questions in previous years (taking into account comments in the Examiners’ reports)?

## C Checklist for marking

The Examiners should provide each marker with the approved model solutions, marking scheme and pre-printed mark sheets.

### Marking Scheme

Mark schemes should be applied consistently. Should it become clear while marking that the allocation of marks should be changed, this should be done consistently for all candidates, and the Examiners should be advised of the changes made.

### Marking

The Examiners will want to review at least some of the scripts during the classification process. They will not re-mark (since they cannot do so consistently across all candidates). They will want to be able to see quickly where marks have been gained. They will also want to be sure that all of a candidate's work has been taken into consideration. Markers are therefore asked to mark as follows.

- Indicate in fractional notation the number of the available marks awarded for each part of a question (e.g. a score of 3 out of a possible maximum of 5 would be shown as 3/5).
- Show the total mark for a question in some distinctive way, e.g.  $\boxed{18}$ .
- Leave some visible trace that each page has been marked - pages on which no marks are shown should not be ticked, but marked “\”.
- Copy the total mark for each question on to the cover page of the answer booklet.
- Use a colour of ink not used by the candidate.
- Not write comments on the scripts, but if necessary write on the mark sheets provided. (Markers may indicate briefly to the Examiners where errors occur.)

### Mark Sheets

When completing the mark sheets, markers are asked to:

- Enter the integral numerical mark for each question, taking care to distinguish between an attempt scoring zero marks (enter “0”) and a non-attempt (enter “-”).
- Compute a check-sum for each candidate, which is the candidate number (mod 100) plus the sum of the raw marks.
- Retain a photocopy of the mark sheets.

### Reports

Markers should provide the Examiners with a brief report on the performance of the candidates on the questions they have marked. The Examiners will consider this report in their deliberations on mark rescaling. In particular, markers are invited to suggest where class boundaries could be drawn.