

MSc IN MATHEMATICAL AND THEORETICAL PHYSICS
AND
MMATHPHYS IN MATHEMATICAL AND THEORETICAL PHYSICS
2021-2022

Second Notice to Candidates

This circular contains information about Hilary term examinations and the Michaelmas term approved subject mini-project.

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Chairman of Examiners

November 2021

Hilary term examinations

Courses: Groups and Representations

Quantum Field Theory

Kinetic Theory

Format of Papers

Examinations will be in person, partially open book exams: students will be permitted to bring one summary sheet of A4 notes (with notes permitted on both sides, on a piece of paper) into the examination. Naturally there will be appropriate individual modifications to the “one sheet of A4” constraint for students with relevant disabilities. The summary sheet is not part of your assessment therefore, you are not required to submit your summary sheet with your scripts.

To better understand what to expect from a partially open book examination question, please see the appendix for the checklist given to assessors who are setting the questions.

Exam	Duration	Materials permitted/not permitted
Groups and Representation	3 hours	No calculator permitted A4 summary sheet permitted
Kinetic Theory	3 hours	Calculator permitted (but not needed) A4 summary sheet permitted
Quantum Field Theory	3 hours	No calculator permitted A4 summary sheet permitted

Please see the appendix for guidance on preparing the summary sheet.

Examination Timetable

The timetable for the examination will be set by the Examination Schools and will be sent to each candidate. The timetable will also be posted on the Examination Schools’ website at <http://www.ox.ac.uk/students/academic/exams/timetables>.

Conduct of Examination Sessions

You should arrive 20 minutes before the start of each of your papers. **You must take your University card with you to each examination and it must be displayed on your desk with the photograph side facing upwards.**

Desks will be numbered, and alphabetised lists will be displayed throughout the reception areas and outside individual examination rooms telling each candidate in which room and at which desk they will take their exam in that session. On reaching your desk you should check that the correct question paper has been provided but should not open the paper until the invigilator declares the start of the examination.

The invigilator will read out a list of instructions on procedure at the start of each examination. You should note in particular that you are not permitted to leave the examination room except with the permission of the invigilator. Candidates are not permitted to leave during the first 30 minutes nor the last 30 minutes of an examination. You may take your question paper and summary sheet with you at the end of the examination but no other paper may be removed from the examination room.

Scripts

You may write on both sides of the paper. You should take careful note of the rubric for each paper. **It is essential that your candidate number be written correctly and legibly on the front page of each answer booklet. You must start each question in a new booklet.**

Handing in of Scripts

You must order your answer booklets by question number and secure with the treasury tag provided. Then, on the front page of the top booklet, list the question numbers of the questions attempted. If you have not attempted any questions, you must hand in an empty booklet, with the front page completed, stating that no questions were attempted.

Rough work

No special paper is provided for rough work. A separate answer booklet may be used for rough working, and should be labelled as such: these booklets must be handed in at the end of the examination. Alternatively, you may do rough working in the same booklet as your fair copy. In this case you should cross through all rough working to indicate very clearly to the Examiners what is to be marked and what is not.

Illegible Scripts

Please write legibly and remember that you must not write in pencil, except to draw diagrams. Examiners may require illegible scripts to be transcribed. The cost of transcription is charged to the candidate

Illness

If you are prevented by illness or other cause from attending any part of the examination you should ensure that the Senior Tutor of your college is informed immediately. In the case of illness a medical certificate will be required.

Formula Sheets

No formula sheets will be provided.

C6.5 Theories of Deep Learning mini-project

Collecting the Mini-Project

The C6.5 Theories of Deep Learning mini-project will open on Inspira (<https://oxford.inspera.com/>) at midday, 12pm, on **Friday week 7 (26th November)**. Please let Academic Admin (acadadmin@maths.ox.ac.uk) know if you are **not** able to access the mini-project. Guidance on using Inspira is available here: <https://www.ox.ac.uk/students/academic/exams/open-book/online-assessments>

Working on your Mini-Project

The work you submit for your mini-project should be entirely your own. You may use books, articles or other references but must acknowledge these. Please see

<http://www.ox.ac.uk/students/academic/guidance/skills/plagiarism> for advice on avoiding plagiarism.

You should begin your mini-project with a brief statement of the overall goal of the project, and finish with a conclusion of what you have achieved (or needed to assume) and comment on what other questions your work might lead to. Your project should be clearly written in sentences with appropriate punctuation, display of formulae, and appropriate use of 'Definition', 'Lemma', 'Theorem', 'Proof', etc. For some mini-projects, you may be asked to typeset your report using LaTeX and to use a specific style file to give a particular format. For C6.5, the project should not exceed 5 pages in the NeurIPS format (plus 1 of references). The projects are designed to be completed in 3-4 days, though further preparation and revision may be needed beforehand.

Queries about Mini-Projects

If you have any questions about the mini-project (e.g. requests for clarification), please email Academic Administration (acadadmin@maths.ox.ac.uk). These will be passed as appropriate to the relevant assessor and/or the Chair of Examiners. Any replies will be sent to all students taking that mini project. You must not communicate directly with the assessor, nor discuss the projects with each other.

Presentation of Mini-Project

Your work should be numbered on each page and provided as a pdf. **You must not write your name on your mini-project; the only identification should be your candidate number which is a separate identifier from your student number that can be found through Student Self Service.**

Submitting your Mini-Project

Electronic Copy

- You should submit an electronic version of your mini-project via Inspira by **12 noon on Thursday 16th December**.
C6.5: <https://oxford.inspera.com/>

- Please give the file you are submitting your candidate number as its name. You should not include any identifying information other than your candidate number.
- At the point of submission, you will be asked to state a declaration of authorship. This will not be made available to the assessors.

Late Submission of or Failure to Submit Coursework

The Examination Regulations stipulate specific dates for submission of coursework to the examiners; this includes the dissertations, mini-projects and any coursework you need to complete if you take a course taught by another department. Rules governing late submission and any consequent penalties are set out in full in the Examination Regulations (Regulations for the Conduct of University Examinations, Part 14).

If you will be prevented by illness or other urgent cause from submitting your coursework on time you should contact your college office or college tutor as soon as possible. Your college is able to submit an application for an extension of time to the Proctors on your behalf.

The scale of penalties agreed by the board of examiners in relation to late submissions of assessed items, without an accepted reason, is set out below.

Table 1. Late Submission Tariff

Lateness	Penalty
Up to 4 hours	1%
4–24 hours	10%
24 – 48 hours	20%
48 –72 hours	30%
72 hours– 14 days	35%
More than 14 days late	Fail

Note: The penalty will be a percentage reduction of the maximum total mark available for the work. For example, if a 10% penalty is applied to an assessment given a USM out of 100 then 10 marks would be deducted. The final mark awarded after application of the penalty cannot be below 0.

For Part C students, failure to submit a required element of assessment, without an accepted reason, will result in the failure of the whole of Part C. For OMMS students, failure to submit a required element of assessment, without an accepted reason, will result in the failure of that assessment. In this case, the mark for any resit of the assessment will be capped at a pass.

Marking

Please see the appendix for qualitative marking criteria.

MSc in Mathematical and Theoretical Physics and MMathPhys in Mathematical and Theoretical Physics

The formal procedures determining the conduct of University examinations are established and enforced by the Proctors.

The Examiners are nominated by the Nominating Committee in the Mathematical Institute and Department of Physics. These nominations are submitted for approval by the Vice-Chancellor and

the Proctors. Assessors are appointed to assist the examiners and in particular the core course lecturers take on the role of assessors in setting, checking and marking the written exam papers.

It must be stressed that to preserve the independence of the Examiners, candidates are not allowed to make contact directly about matters relating to the content or marking of papers. Any communication must be via the Senior Tutor of your college, who will, if he or she deems the matter of importance, contact the Proctors. The Proctors in turn communicate with the Chair of Examiners.

Appendix

Checklist for assessors

The examiners provide assessors drafting papers with the following checklist of important considerations.

- a) Is the question on the syllabus (as in the Examination Regulations or Course Handbook including the lecture course synopsis)?
- b) Is the mathematics correct?
- c) Is the notation and terminology standard/obvious/defined? (Standard usage from the course is acceptable without explanation but phrases such as 'as in the lectures' should be avoided.)
- d) Is the question unambiguous? Is it clear what may be assumed, what detail is required, and what would constitute a complete answer?
- e) Is the form of presentation familiar/inviting/readable?
- f) Does each question have an easy start, worth around 10 marks, which might be readily and routinely completed? This should not wholly be testing memory of previous material explicitly seen.
- g) Is there material designed to differentiate at the class borderlines?
 - (i) For the II(i)/II(ii) borderline is there a part that tests understanding of standard concepts/techniques (whilst still being rather straightforward) which tests whether a candidate can do any more than merely reproduce the bookwork verbatim?
 - (ii) For the I/II(i) borderline is there a part for which a full solution requires truly excellent understanding and skill?
- h) Is it the case that only exceptional first-class students are capable of gaining full marks?
- i) Is each question overall of a straightforward character?
- j) Are the questions as a whole fairly spread across the syllabus?
- k) Are the questions of comparable difficulty to one another?
- l) Are the questions sufficiently different from those set in recent years?
- m) Is the question formatted using the oxmathexam.cls file?
- n) Does the question, adequately spaced, fit on a single page?
- o) Is the question suitable for an examination to which students can bring one sheet of A4 (with writing on both sides) with summary notes? In particular, candidates should not be able to obtain significant numbers of marks simply by reproducing material from lecture notes or problems sheets. However, as in (f) above, each question should include one or more parts, worth around 10 marks, that will be found straightforward and accessible by students who have conscientiously studied and understood the course material (including lecture notes and problems sheets), which might include producing arguments similar to those in the notes or problems sheets.

A4 Summary Sheet

Students are permitted but not required to take one sheet of A4 paper (with material on both sides) containing material they have prepared.

Students must prepare their sheets according to the following rules, which are designed to ensure fairness and consistency for all students.

- A4 paper must be used, with at least 2.5cm margins on all four sides. Margins must be empty.
- Typed content (not including standard superscripts and subscripts etc) must be in font size at least 10. No more than 58 lines of typed text may be used.
- Handwritten material must be written on lined paper (or its electronic equivalent) supplied by the departments, with no more than one line of handwriting per line (subscripts, superscripts, and natural stacking such as $\lim_{n \rightarrow \infty} x_n$ are all allowed. Diagrams should be drawn at a commensurate scale.
- Handwritten content must not be in pencil.
- It is acceptable to mix typed and handwritten content, subject to the constraints above.
- All sheets will need to be on paper (one sheet of A4 per student) to go into the exam. They may be created on paper, or created electronically and printed.
- In all cases, these rules are subject to appropriate individual variation for students who require adjustments for reasons of disability. This will be coordinated between the Disability Advisory Service and the departments.

The departments will make available a LaTeX template for those who wish to use it. The departments will also provide suitable (bespoke) lined paper, both in physical form and via a printable pdf. (The lines will not be too dark, because we know students will want to draw diagrams.) These will be available before the end of Michaelmas Term.

There is no requirement that students prepare their sheets individually. They are free to collaborate if they wish. They are also permitted to copy material from their lecture notes to include on their sheets (subject to the bullet point rules above). It is expected that producing these sheets will be a useful aspect of student revision, so students who do not play an active role in producing the sheets they use are likely to be at a disadvantage in the exam.

Students should, as always, feel free to consult their college tutors or supervisor for general revision support, but should not expect their college tutors to provide significant course-specific support in producing summary sheets, in looking over draft summary sheets, or in discussing what material to include.

Qualitative Criteria for Mini-Projects and Take-Home-Exams

The mark awarded to a mini-project, whether marked according to model solutions or blind, double marked, or to a take-home-exam should be according to the following qualitative criteria.

70 – 100 marks The candidate has demonstrated an excellent understanding of almost all the material covered with a commensurate quality of presentation, and has completed almost all of the assignment satisfactorily - further subdivided by;

90 – 100 marks The candidate has shown originality or insight that goes beyond a basic completion of the task set.

80 – 89 marks The work submitted shows a near-perfect completion of the task in hand, but does not meet the additional requirements above, or does but has defects in presentation.

70 – 79 marks The work submitted is of a generally high order, but may have minor errors in content and/or deficiencies in presentation.

65 – 69 marks The candidate has demonstrated a very good understanding of much of the material, and has completed most of the assignment satisfactorily.

60 – 64 marks The candidate has demonstrated a good understanding of much of the material, and has completed most of the assignment satisfactorily.

50 – 59 marks The candidate has demonstrated an adequate understanding of the material and an adequate ability to apply his or her understanding.

40 - 49 marks The work submitted, while sufficient in quantity, suffers from sufficient defects to show a lack of adequate understanding or ability to apply results.

30 - 39 marks The candidate, while attempting a significant part of the mini-project, has displayed a very limited knowledge or understanding at the level required.

0 – 29 marks The candidate has either attempted only a fragment of a mini-project or has shown an inadequate grasp of basic material.