

Title of Examination:		Part B Mathematics and Mathematics&Philosophy
External Examiner Details	Title:	Professor
	Name:	Richard
	Position:	Professor of pure mathematics
	Home Institution:	Imperial College London

Please complete both Parts A and B.

Part A					
	Please (✔) as applicable*	Yes	No	N/A	
A1.	Did you receive sufficient information and evidence in a timely manner to be able to carry out the role of External Examiner effectively?	1			
A2.	Are the academic standards and the achievements of students comparable with those in other UK higher education institutions of which you have experience?	1			
A3.	Do the threshold standards for the programme appropriately reflect the frameworks for higher education qualifications and any applicable subject benchmark statement? [Please refer to paragraph 3(c) of the Guidelines for External Examiner Reports].	1			
A4.	Does the assessment process measure student achievement rigorously and fairly against the intended outcomes of the programme(s)?	1			
A5.	Is the assessment process conducted in line with the University's policies and regulations?	1			
A6.	Have issues raised in your previous reports been responded to and/or addressed to your satisfaction?	1			
* If you answer "No" to any question, please provide further comments in Part B. Further comments may also be given in Part B, if desired, if you answer "Yes" or "N/A".					



Part B

B1. Academic standards

a. How do academic standards achieved by the students compare with those achieved by students at other higher education institutions of which you have experience?

I would say that the bookwork parts of the exams was harder than the equivalent at my own university, but that Imperial still has more problem-solving than Oxford. Of course the papers were much more demanding than at most UK universities, as they should be. The results were rather good, and the students performed at high level, much higher than students at most UK universities.

However, the number of 2:1s is much higher than at my own university, and, I imagine, Cambridge University. I think a 1st from Oxford is worth more than 1st from my own institution, but a 2:1 is probably worth a little less. I have said this twice already, but I still think this is wrong, and that the university should have the confidence to award fewer 2:1s in mathematics.

b. Please comment on student performance and achievement across the relevant programmes or parts of programmes (those examining in joint schools are particularly asked to comment on their subject in relation to the whole award).

The students performed at high level. However there were still scripts at the 2:1/2:2 borderline in which sophisticated bookwork proofs are given perfectly, word for word, then at the first sign of independent thought being necessary, the student stops and moves onto the next question, or writes some incomprehensible muddle. These students should be forced to use their mathematical and problem-solving ability, and not just their memories, to inch over the 2:1 borderline.

B2. Rigour and conduct of the assessment process

Please comment on the rigour and conduct of the assessment process, including whether it ensures equity of treatment for students, and whether it has been conducted fairly and within the University's regulations and guidance.

My final experience as an External Examiner was again very impressive. Helen Lowe, Waldemar Schlackow and all the examiners ran things with great efficiency and expertise. In particular, Professor Batty is an extraordinarily efficient, conscientious and hard-working chairman, and it is clear that Professor Joyce will be equally good next year. The examiners went to laudable lengths to try to make the exams rigorous and fair, and to ensure University regulations were upheld.

The advice on exams that I had given was acted on. In a few cases the Chairman of the examiners could perhaps do with stronger powers to force recalcitrant assessors to make the asked-for changes.

Any problems which might have arisen had already been anticipated, with many possible solutions generated and presented to us for discussion. I was provided with everything I needed and I felt a good job was done. The students' exam scripts were in very good hands; there was enormous experience present, and huge concern for the students' fair treatment. Everything possible was done to ameliorate the worst excesses of the University's unsuitable (for maths) USM system: see B3 below.

B3. Issues

Are there any issues which you feel should be brought to the attention of supervising committees in the faculty/department, division or wider University?



Each year I complain about the **USM system**. Insisting that 50% of all marks must lie between 60% and 70% probably makes sense in the arts and humanities, but not in mathematics, where it means only making serious use of 10% of the available marks.

I understand the desire to compare students across disciplines with a uniform mark scheme, but this system does not achieve it. I would advise letting the maths department use their experience to both scale and set grade boundaries as they wish. Once this is done, it is an easy job to map the results to USM.

For the second year running there was a mark missing from the **Philosophy** scores. It didn't waste as much time as last year, but as I left there was a chance of it delaying the release of the class list.

A small change could help the next External a great deal: the **exam rubric** on the front of the paper (length of exam, best 2 questions count, etc) could be usefully put on the front of the draft papers sent to Externals.

Since Prof Batty ran everything so efficiently, this year we had quite a lot of spare time *after* the (very little) time I had to check scripts. It would be nice to rejig things to give the externals an extra hour or 30 minutes to **look at scripts**.

B4. <u>Good practice and enhancement opportunities</u>

Please comment/provide recommendations on any **good practice and innovation** relating to learning, teaching and assessment, and any opportunities to enhance the quality of the learning opportunities provided to students that should be noted and disseminated more widely as appropriate.

Assessors now get the computer's algorithmically generated class borderlines within 24 hours of the exam being marked. This means they get to compare their own assessment of what constitutes a 2:1 or 1st with reality. In some cases the results were obviously very surprising to the assessor, and led to some lively discussion. I fear it was a lot of work for Prof Batty, but I also think it is hugely beneficial for the assessors and will eventually lead to better exams, and perhaps pressure from the assessors to award less 2:1s. Whatever the effect, I think it is a fine example of good practice and should continue.

As I said before, the huge amount of knowledge and experience amongst the examiners is obviously enormously important and helpful, and not always available in other institutions.

It is hard to compare performances across papers in completely different topics, but the computer model is impressive and seems to do a good job in calibrating based on Part A performance. My own university also calibrates based on performance on (the equivalent of) other Part B papers. This is often more relevant and has a higher correlation to their performance on the given paper.

B5. Any other comments

Please provide any other comments you may have about any aspect of the examination process. Please also use this space to address any issues specifically required by any applicable professional body. If your term of office is now concluded, please provide an overview here.

I have enjoyed being an external examiner. I have learned a lot, and been impressed by many aspects of your system.



I have made a big push for exams to contain less bookwork and more problem-solving. Over the last 3 years I think there has been a noticeable improvement from this point of view. Most papers this year had a good mix of bookwork, unseen material, and interesting problems to test a range of student abilities. However, I still think things should move further still in that direction, with more *easy* problems to solve.

As I have said before, a few years after your students leave, they will have forgotten their bookwork. What will remain is problem-solving ability. I consider it vitally important that 2:1 students have proven problem-solving ability. They should not be able to get close to the 2:1 borderline on bookwork alone.

I fear the B/S/N system creates an unconscious bias towards lots of bookwork and then hard problems to end with. Thus the exams could quickly slip back towards having even less of the easy problem-solving.

B/S/N could be renamed to encourage assessors to set exams with lots more easy problem-solving in place of some of the "B/S", before the usual harder "N" problem to finish off.

I understand that plans to extend exams to 2 hours are being discussed. I would strongly support this, but the guidance would have to be carefully modified to ensure it didn't just lead to longer exams with yet more bookwork. It is a great opportunity to make problem-solving a prerequisite for a 2:1.

Signature:	Rhoman			
Date:	17.7.2015			
Please email your completed form (preferably as a word document attachment) to: <u>external-examiners@admin.ox.ac.uk</u> and copied to the applicable divisional contact.				
Alternatively, please return a copy by post to: The Vice-Chancellor c/o Catherine Whalley, Head of Education Planning & Quality Review, Education Policy Support, University Offices, Wellington Square, Oxford OX1 2JD.				