

# Summary of Examiner's Reports for NST maths 1A and 1B, 2010

R.R. Horgan

## 1 NST maths 1A

This is the fourth year of the format which includes section A on each paper comprising 10 short questions to test skills and carrying 20 marks; section A1 (on paper 1) tests school-based skills and section A2 (on paper 2) tests skills acquired at Cambridge. The following section each consists of 10 questions, two of which are starred requiring knowledge of B-course material. There were 420 (419 in 2009) NST students and 63 (62 in 2009) CST students taking the exam.

As in previous years, it was gratifying that no reports of misconduct were received. The sorting was undertaken by the Board of Exams which is complimented on the speed and accuracy with which the task was done.

Raw marks were input by each examiner into a personalized spreadsheet and data from master cover sheets were entered into another spreadsheet which was used to check final amalgamated markbook. Only a few discrepancies were found which were corrected. It is not clear from the report, but the task of entering the data from master cover sheets was automated by using machine-readable master cover sheets for the first time. This is particularly important in light of the events of 2009; this method is very successful indeed and caught errors very quickly. The computer officers concerned should be congratulated and it should be noted that Dr Rose has done a very good job indeed.

The median mark was 162/240 compared with 140 in 2009, 131 in 2008 and 137 in 2007. This clearly corrects the trend towards lower scores and is to be welcomed. A significant fact is that the median on Paper 1 (78) and Paper 2 (83) are broadly comparable. It should be noted that some questions on Paper 1, numbers 15,16 and 18, were poorly done and had relatively few attempts. However, the scores on Paper 2 are reasonably uniform. The report makes the comment that the starred questions ... were relatively unpopular". This misses the points that (a) these can only be attempted by B-course candidates and (b) they are generally somewhat more sophisticated and (c) given the upper limit of five attempts, a B-course candidate is more likely to hand in the best five which are more likely to be from the first 8, joint, questions.

Concerning the section A questions, the scores were higher than last year. On section A1 the mean score was 14.9/20 (14.17/20 in 2009, 11.1/20 in 2008) and on section A2 it was 16.6/20 (14.83/20 in 2009, 12.9/20 in 2008). This is an encouraging improvement. Again as I commented last year, I am surprised by the statement on page 3 that both sections A1 and A2 were designed to test exclusively core A-level mathematics; it may be that the writer of the report copied these lines from last year. My understanding is stated

in my first paragraph above that A2 is to test core knowledge learned in the Cambridge course. This should be clarified.

There are six important points raised by the report and also by the examiners:

- (1) The role of sections A1 and A2 should be clarified.
- (2) As in previous years, the Examiners recommend that the issue of Mathematics only counting 75% should be reconsidered. This was brought before the NST Management Committee and the 75% rule was confirmed. It arises because physical science students can rise to the top of the NST classification on strong performance in physics and mathematics to the detriment of those in the biological sciences and it is the strong representation of the biological science departments that the balance be addressed in this way. It should be noted that the score in Mathematical Biology also counts 75% and in EMB it is 70%. This is no longer under active discussion. I made this identical comment last year but it seems not to percolate down to the Examiners. In any case, this is not the responsibility of the Faculty of Mathematics.

It should be noted, however, that there is a new 6 lecture NST computing course which is no longer lectured by Frank King and is no longer under the administration of the Faculty of Mathematics. Instead, it is lectured on a rotating basis by participating NST departments. In 2010/11 the mark for this course will still be included in the maths mark but in future years it will stand separately. This means that actual percentage assigned to the two NST maths papers will rise from around 70% to the 75% value in later years.

- (3) The Examiners believe that the Mathematics courses should be continue to be examined as two papers.
- (4) As in former years the Examiners felt that the marking load is too high. There are three issues. The first is that the load is so high that if one examiner were ill or unable to continue then the exam would be compromised. The second point is that it was recommended that there be an examiner from the Computer Laboratory. This would increase the number from 6 to 7 thus alleviating the load. This was not implemented for 2009 or 2010. The last point is the timing of the exam and the time allowed for marking. It may not be possible to schedule the exams earlier but it would help were this possible; for example, interchanging with the IB maths exam..

I suggest that the Computer Laboratory does provide one examiner (63 out of 420 students is 1:7), and that assessors be appointed to mark the A1 and A2 sections which are are thought to be each equivalent to two long (20 mark) questions for marking purposes. Prof. Allanach (Senior Examiner 2010/11) was is very keen to implement changes of this kind.

- (5) Next year's Senior Examiner should be appointed early and shadow the current Senior Examiner.
- (6) To note: banning calculators is perceived as very important since many questions especially on the A sections could now be solved using a calculator.

## 2 NST maths 1B

The number of students taking the exam is not stated. There were few minor typographical errors in the exam which had no consequences. Consistent with agreed NST1B policy giving 60% of candidate a II.1 or better and the II.1/I border was determined by detailed scrutiny of performance. Because the exam was hard it required marks to be scaled and the scaling method of the guide handbook did not work well and was modified.

Machine-readable master cover sheets were used for the first time and were successful. This certainly prevents the kind of serious error that arose last year. Some students failed to fill them in correctly and the Examiners advise that an email be sent to candidates explaining the importance of getting this right.

The exam was considered fair.

The main issue to which I would like to draw your attention is that of how to best scale the marks to conform to an acceptable profile and give due credit to the students.