

Summary of Examiner's Reports for NST maths 1A and 1B, 2008

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1 NST maths 1A

This is the second year of the new format which includes section A on each paper comprising short questions to test skills; 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 397 NST students and 74 CST students taking the exam with four withdrawals.

It was gratifying that no reports of misconduct were received; the only problem on the papers concerned shading on a figure which was poorly reproduced in the exam paper. A correction was communicated and there was no disadvantage discerned for any candidate. The sorting was undertaken by the Board of Exams and was speedily and accurately done.

The median mark was 131/240 to be compared with 137/240 in 2007 (and 136 in the earlier format exam of 2006). A significant fact is that the median on Paper 1 (61) was lower than that on Paper 2 (71) partly because the score on Section A1 (mean 11.1/20) was lower than that on Section A2 (12.9/20) but also that question 2T on paper 1 was attempted by 403 students but only a median of 6/20 was achieved, whereas conversely question 4Z of Paper 2 had 452 attempts with a median of 16/20.

There are four important points:

- (1) The score on section A1 (mean 11.1/20) is lower than that on section A2 (12.9/20) and the examiners concluded that this indicated that school-acquired skills based on core material had evidently been forgotten. However, in 2007 these scores were 12.3/20 and 15.3/20. It may be that poor performance on section A does suffer from rusty knowledge of simple ideas but also that there is a judgement by students that the rate at which marks accrued from section A is slower than from doing long questions. Is this really a measure of solidity of knowledge of background material? We should emphasize that students should be very familiar with the skills material and they should have attempted all the questions in the NST maths workbook before coming up. It is not unreasonable to expect the first supervision(s) to concentrate on this material using past papers and specimen questions. It may be that this is not the case in practice.

The examiners did state that they found the cohort's lack of facility at basic mathematics (trigonometry, integration by substitution and vectors) disturbing.

- (2) There were relatively few attempts on the starred B-course questions and these were generally not well done especially on Paper 1 where Q9 had 26 attempts with mean 10.8/20 and Q10 had 2 attempts with mean 4.0/20. On Paper 2 Q9 had 70 attempts with mean 7.3/20 and Q10 had 55 attempts with mean 11.1/20. Although more students attended the A-course than the B-course there were still roughly 200 students in B-course lectures. It is clear that the more able students are nevertheless obtaining the majority of marks on unstarred questions. One might conclude that there are still too many students attending the B-course but equally, given the restriction to attempt no more than 5 long questions, it would seem a good strategy to accrue marks on what are assumed to be easier unstarred questions having spent precious revision time mainly

on A-course material. I believe this does have some implications for the rôle of the B-course in NST 1A.

- (3) The Examiners recommend that the issue of Mathematics only counting 75% should be reconsidered and I feel this should be revised.
- (4) The Examiners were divided over the question of whether Mathematics could be rigorously examined in only one paper. The relevant points are that one paper containing section A questions, long questions and starred long questions, covering respectively basic knowledge, the A-course material and the B-course material, is not adequate to test these different skills and knowledge bases. It should also be noted that in other NST subjects up to 33% of practical marks are also included (maths does also include computing at the level of 7%).

2 NST maths 1B

There were 138 students with two withdrawals. There were no typographical errors in the exam. 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. There were three failures.

In Paper 1 questions 1A on vector calculus and 7C on complex analysis were not popular and surprisingly poorly done. However, in Paper 2 the group theory questions proved more popular than in previous years and were reasonably well done. Whilst there was some argument in the discussion over change of syllabus that this topic should be dropped, I think this justifies its inclusion.