

Recommendations of the Teaching Committee

The Committee met three times to consider the examiners reports on the 1998 Tripos examinations. Their response to the reports is as follows.

Part IA

1. (Examiners' report, 2(i)) The Committee *recommended* that the Faculty Office should e-mail Part IA students (only) advice about the rubric (mentioning especially that they should write on one side of the paper only and not use red or green ink, and explaining the system of labelling examiners and bundling scripts) some weeks before the examination.
2. (Examiners' report, 6(ii) and External Examiner's report) The Committee *recommended* that guidance on scaling the Computer Science and Physics marks should be provided for Chairman of Examiners. The Committee *noted* that the problem of obtaining physics marks is to be discussed between the two faculties.
3. (Examiners' report, 4) The Committee *recommended* that clearer information on classing criteria is given to candidates in all parts of the Tripos, by means of the Schedules Booklet. If, as seems to be the case, the merit mark provides an ordering which closely resembles the final ordering, then the schedules could give the formula for the previous year's merit mark in each part of the Tripos together with the approximate merit mark border lines of the previous year (or the average of the last few years). This should be accompanied by the qualification that borderline candidates are scrutinised carefully and that the number of alphas as well as other factors may be taken into account. The Committee also *recommended* that the role of alphas at the lower borderlines should be clarified, both to candidates and examiners.
4. (Examiners' report, 6(iii, iv) and External Examiner's report) The Committee *noted* that both the Probability and the Dynamics questions were comparatively poorly done. In the case of Probability, it was noted that the course was well-received (according to the e-mail questionnaires) and that therefore the questions were probably too demanding. The Committee *recommended* that the examiners for 1999 be asked to consider whether less demanding questions would be more appropriate. In the case of Dynamics, the Committee examined student e-mail questionnaires and *noted* (i) that the course was not well-received and (ii) that there is a different lecturer this year, and *agreed* that no further action should be taken this year.
5. (Examiners' report, (iii, v)) The examiners comment that the tail of weaker students (referring, presumably, to examination performance) has increased and that the examination was only just easier than last year. The examination statistics

show considerable variation in take up rate and score of the short questions. The Committee *recommended* that guidance be given to all question setters in all part of the Tripos with short questions on the length and difficulty of short questions. The Committee *agreed* that suitable guidelines would be: *Short questions should be accessible to any student who has studied the material conscientiously. They should not contain any significant ‘problem’ element and it should not take more than about 10 minutes for the examiner to write out a full solution.*

6. (External Examiners’ report, 4) The External Examiner suggests that students should be required to pass each individual paper. The Committee considered the implications of this suggestion carefully. It was felt that: (i) it would considerably increase the stress on the candidates; (ii) the ‘educational soundness’ of learning all subjects is encouraged by the supervision system and it is appropriate to allow candidates to specialise in the examination; (iii) there is already incentive (in the restrictions on the numbers of questions allowed in each subject area and the grouping of questions on papers by subject) in the examination for candidates to revise all courses. The Committee believes that the examination should not be modified in this way.

Part IB

1. (Part IB Examiners’ report, 1) The Committee were not satisfied by the statement that the two minor errors on the papers ‘did not cause confusion in the examination’ and one of the junior members said that he had spent extra time unnecessarily on one of the questions. However, the Committee did believe that the examiners took all steps, on the basis of evidence available to them, to ensure that candidates at the borderlines were not disadvantaged by errors in the papers.
2. (Part IB Examiners’ report, 2 and Part II External Examiner’s (ERP) paragraph 4) The Committee *recommended* that the red line that examiners are instructed to draw down each page could reasonably be replaced, at the discretion of the individual examiners, by a big red tick. This applies to all parts of the Tripos.
3. (Part IB Examiners’ report, 2) The recommendation of the examiners that information about the number of capital A questions for each candidate be available to the examiners was thought to be sensible but the Committee *agreed* that this was a matter for next year’s examiners.
4. (Part IB Examiners’ report, 3 and Part II External Examiner’s (ERP) report) The Committee *recommended*, following the recommendations in the Examiner’s report, that the external examiners should be sent the project booklet along with the draft examination questions and that the scripts for the computational projects should be

stored with the scripts for the written examinations so that external examiners have easy access.

5. (Part IB Examiners' report, 5) The Committee noted the low take up rate for questions on Geometry and also the poor response to the course recorded in the e-mail questionnaire. However, since the lecturer is changing this year, it was decided to see what happens in the 1999 examination. The Quantum/Relativity statistics did not seem to be very far out of line and again it was decided to see what happens in the 1999 examination.
6. (Part IB External Examiner's (DRJC) report, 2nd paragraph) The first year course taken by this year's second year was in fact substantially different from the first year Numbers and Sets course, taken a year ago by this year's Part IB candidates, referred to by Dr Chillingworth. The Committee thought that action on the lines suggested (increasing the section on Proof) would not be appropriate now, though the matter should be reviewed next year.
7. (Part IB External Examiner's (DRJC) report, 3rd paragraph and Part II External Examiner's (PMN) report) The Committee *agreed* that it is good examining practice to provide draft mark schemes at the same time as model solutions and *recommended* that this be done in all parts of the Tripos.

Part II

1. **Part II examination statistics** The Chairman tabled a paper showing the performance of a 'typical' 1/2 borderline candidate. The Committee *noted* that the figure 2.1 for the number of alphas achieved on each of papers 1–3 is still very low, despite a significant improvement over last years' figure (1.7) and *recommended* that the paper be forwarded to the Part II examiners.
2. **Mistakes on the papers** The Committee noted with alarm the number of mistakes on the printed papers and the refusal of one lecturer to provide model solutions. The (internal) Examiners' report mentions 8 mistakes on the papers, 5 of which were corrected in the examination; the External mentions 12. Which is correct? The Committee *recommended* that the Examiner's reports for all parts of the Tripos should in future contain a list of mistakes on the papers and an assessment of how each arose, for the assistance of future examiners.
3. (Part II External Examiner's (PMN) report, 1, and Part II External Examiner's (ERP), second page) The Committee considered the function of 'essay questions'. It agreed that the purpose is to test mathematical content and correctness rather than structure (except where it effects the mathematical argument) and style. The Faculty does not aim to teach essay-writing skills. The Committee noted that some

subject areas are much less suitable than others for essay questions, and giving marks for style would lead to an even greater disparity between the essay questions and problem questions. It was noted that the scope for substantial essays will be reduced in the future, since students will be restricted to four (rather than three) questions on Paper 4 of Part II(B). Nevertheless, the Committee believes that clearer guidance about what is required from an essay question should be given to students.

4. (Part II External Examiner's (PMN) report, 2) The Committee *recommended* that External Examiners should be resent any questions that had been substantially revised. This should apply in all parts of the Tripos.
5. (Part II External Examiner's (PMN) report, 3 and 4) The question of marking schemes was discussed above.
6. (Part II External Examiner's (PMN) report, 5) The Committee thought that criteria for the borderlines was a matter for next year's examiners, who will receive a copy of these reports, to consider. STCS, who is acting chair of Part II examiners this year, said that Dr Neumann's comments have already been fully discussed by the Part II examiners, and a paper is being produced for a later meeting.
7. (Part II External Examiner's (PMN) report, 6) The Committee *agreed* that comparison with the previous Part IB results may not be the best way of deciding borderlines in Part II. However, since the marking scheme for 1999 is very different from that of 1998 (Part II(B) questions marked out of 30) and the examination is also different (four questions allowed in Part II(B), paper 4; O-courses examined in Part II(B); same questions on joint courses in II(A) as II(B)), the 1999 examiners are unlikely to be able to use the 1998 borderlines as a guide. STCS reported that this year's Part II examiners are considering this point in conjunction with the previous point.
8. (Part II Examiners' report (PMN), 7) Dr Neumann feels that the standard for a first class in Part II(A) was rather high and that the standard for a first class in Part II(B) is a little low. He presents an analysis of marks and a comparison with other universities, taking the top marks actually given on the examination to represent 100%. The Committee was not persuaded by this argument; but Dr Neumann is an experienced examiner and his advice that the borderlines be investigated should be heeded. The Committee *recommends* that the Part II Examiners be asked to examine the first/second borderline criteria, especially in view of the considerable changes in the structure of the examination for 1999.
9. (Part II External Examiner's (PMN) report, 8) The Committee *agreed* that the matter of disappointing answers to examination questions in some areas should be considered by the Faculty Board. The Committee would have liked to know if this was significant in the context of an examination of this kind and noted that the Excellence Committee is investigating the possibility of a statistical study of Part II.

The Committee also thought that part of the reason for a variable response may be the lack of guidelines to question setters on the length of questions and noted that this year's Part II examiners are trying to formulate guidelines.

10. (Part II External Examiner's (PMN) report, 9) The Committee *agreed* that it would indeed be sensible to appoint external examiners who were available to take a fuller part in the process than had been possible for Dr Neumann, but noted that Dr Neumann had nevertheless played an extremely valuable role for which both the examiners and this Committee are grateful. The Committee noted that a more realistic rate of pay would probably encourage more people to make themselves available for this demanding appointment.
11. (Part II External Examiner's (PMN) report, 10) The Committee *recommended* that the Faculty Board should consider appointing a third external examiner, in the general field of statistics.
12. (Part II External Examiner's (ERP) report, 2nd paragraph) The question whether significantly altered questions should be shown to the External Examiners is discussed above.
13. (Part II External Examiner's (ERP) paragraph 3) The question of mistakes is discussed above.
14. Part II External Examiner's (ERP) paragraph 4) The question of red lines on scripts is discussed above.
15. Part II External Examiner's (ERP), second page) The questions of borderline criteria and essays is discussed above.
16. Part II External Examiner's (ERP), second page) Professor Priest suggests that the Computational Projects course should be made compulsory. The only way to achieve this in the current (non-modular) Part II scheme would be to fail candidates unless they achieved a satisfactory mark in the Computational Projects. The Committee *agreed* that this would not be desirable. The fact that the Computational Projects are the only way of obtaining credit outside the written examination indicates the Faculty's view, shared by Professor Priest, of their importance. This provides very significant pressure to attempt the Projects, as is indicated by the high take up rate — well over 90% in Part II.