Part IB Examiners and Assessors: Faculty Board Guidelines

Guidelines approved by the Faculty Board for use in 2025-26.

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Guidelines for Examiners and Assessors: key points for all Parts

General points

1. Examiners and Assessors are required to adhere to the timetable and detailed instructions provided by the Chair of Examiners.
2. Examiners must follow all aspects of the agreed policies on security.
3. Under the current modes of assessment pilot the requirement to publish form and conduct notices in the Reporter no longer apply. However the principal that students should be informed well in advance of changes does and it is vital that departmental processes on course and examination change are followed.
4. External Examiners have an important role to play in our examinations. In particular, Examiners should pay due attention to comments made on their draft papers by the External Examiner.
5. The General Data Protection Regulation (GDPR) 2018 requires that any data retained may be communicated to students on request. The Faculty Board Office retains mark books and the students will receive transcripts giving a breakdown of their marks. Examination scripts are not normally released and are exempt from disclosure, but any written comments made by the Examiners (excluding ticks and minor notational marks) would need to be transcribed and made available. Examiners must therefore adhere to the script marking guidelines given below so that data can easily be made available to students who make a request under the GDPR.
6. All Examiners, Assessors and those involved in the administration of exams are expected to treat all aspects of the exam process, which are not included in publically available material, as confidential. This includes details of all discussions between the Examiners, Checkers, Examinations Secretaries and the examinations support team.

Purpose of Tripos exams

1. The purpose of the Tripos exams is to determine the extent to which candidates have achieved the aims and objectives of the lecture courses and to allow students to demonstrate that they have achieved the AHEP 4 learning objectives specified by the Engineering Council. Exams should test students on whether they:

(a) have understood the basic principles with which they have been confronted, and their limitations;

(b) have developed skills in applying basic principles to the solution of straightforward problems, and;

(c) have developed a deeper understanding, allowing them to tackle complex problems that are, for them, novel.

Setting the paper for all Parts

1. In setting the paper, Examiners should attempt to cover most of the course syllabus and no major topic should be completely omitted. Questions should be of uniform difficulty. Setters should study the papers and Examiners' reports from previous years and note which questions proved satisfactory and which did

not. No major changes should be made to the structure or style of papers without consulting the Chair of Examiners: it may be necessary to issue a sample paper. The best indication of the work that has been covered is obtained from the course hand-outs and examples papers. Lecturers should always be consulted and shown the questions on their part of the course.
2. Examiners have a tendency to set questions which are too difficult. When a lecturer, checker, or External Examiner warns that a draft question is too difficult, history shows that he or she is almost always correct. It is important for Examiners to act on such comments.

Structuring the questions

1. Exams should be structured so that very able students will distinguish themselves above the rest and less gifted, but conscientious, students will achieve a safe II.2 level mark.
2. Questions with only one substantial point are unsatisfactory because candidates either get very high or very low marks. Questions should whenever possible be ‘scaffolded’, i.e. structured as a series of closely linked steps.
3. If a question requires the derivation of a key equation en route, candidates should be specifically asked to derive it as an intermediate result. Not all is then lost in later parts of the question if they have been unable to perform the derivation correctly. Lengthy or difficulty algebraic manipulation should be avoided.
4. **Symbols** used in questions should be clearly defined except where the definitions are systematically provided in examination data books or data sheets.
5. It is most important that Examiners always keep in mind the time available for answering a question. They should also remember that questions are often greatly improved by including a diagram.
6. **Essay type questions** are rarely answered really well or really badly. Engineering students may avoid essay questions because they know there is little chance of gaining high marks. If a question simply asks

‘Discuss the design parameters for a high-speed switching bipolar transistor’,

then mediocre answers can be expected. A better way of structuring the question would be:

‘For a bipolar transistor:

(a) Explain the concept of minority carrier stored charge in the base.

(b) Outline the effect of current crowding at the base, indicating why it is deleterious and how these deleterious effects are combated.

(c) Explain what causes breakdown in the collector of a transistor and why an increase in the breakdown voltage increases the transit time for the relevant charge carriers.

Hence, discuss criteria for the design of a high-speed switching bipolar transistor.’

This type of structure will help students to provide appropriate answers, ensuring some uniformity and making for easier comparisons and better marking. The important points expected in the answer should be identified, and form the substance of the crib. Some open-endedness towards the end of an essay question is desirable, however, so that better candidates can display their knowledge.

Please see the Part-specific guidelines.

Checking the draft papers

1. Checkers have a most important job. They ensure that questions are valid, clearly expressed and of the correct level of difficulty. The checker must write solutions for every question independently of the setter: simply accepting an Examiner's explanation without a clear understanding is unacceptable. After checking, a detailed and easily readable crib comprising the model solutions and marking scheme is prepared by the Examiner in consultation with the checker.
2. At this stage, the examination paper and crib should be, in the view of the setter and checker, ready for market in every respect. This includes not only the length, difficulty, content, and style of each question, but also the presentation details such as layout (including diagrams), sentence structure, grammar, and

punctuation. If these aspects are covered conscientiously by the setter and checker at an early stage it saves everyone a very large amount of time and work later on. It is not acceptable for semi-complete draft papers to proceed to the reading meeting.

Script marking guidelines

1. All aspects of the marking process must be fully auditable and defensible in case of an appeal.
2. Examiners should adhere to the marking scheme indicated on the exam paper and crib. The exam paper will show the approximate number of marks for each part of a question in the right margin, the mark to be level with the end of the paragraph(s) to which it refers.
3. Scripts should be marked **in red ink** using the following guidelines:

i. mark to whole numbers (do not use half marks);

ii. tick or score through every page to indicate that the page has been seen;

iii. put sub-marks in the right-hand margin - these must correlate with the breakdown on the paper;

iv. circle the total mark for each question at either the start or the end of the question;

v. record the marks on the script cover sheet;

vi. keep the scripts in the correct order.

vii. **no comments whatsoever should be made on the scripts.** Under no circumstances should an Examiner write any comments about a candidate's performance.

4. Calibrate the marking to comply with the required mark distribution. If, after about 20 scripts, it appears that adjustments will be required to produce a mark distribution in line with that required for that particular Part of the Tripos, the marking scheme can be revised slightly and the scripts remarked. If major adjustments are required, the Chair should be consulted.
5. When marking a large number of scripts, standards may shift slightly. It is therefore best not to mark whole scripts at a time as some candidates may get a raw deal. After doing the calibration described above, divide the scripts into piles, then mark Q1 right through starting with pile 1, then Q2 right through starting with pile 2, and so on.
6. Silly arithmetical and algebraical mistakes should not normally be penalized heavily. It is very troublesome when an early minor error gets carried through a solution: the Examiner then has no choice but to follow the whole solution in detail to check the correctness of the later work. Questions should be structured to avoid this waste of time.
7. Transfer the raw marks for each question to the excel markbook provided. NB. where a candidate answers more than the required number of questions the Examiner should mark all the questions answered and then exclude from the marks recorded the question(s) scoring the lowest mark(s).
8. **Scaling** of the marks may be required by some Triposes. In such cases, the Chair will issue instructions as to how to proceed.

Useful links

- Marking & classing criteria
- Exam paper templates and style recommendations
- Data security & the production of exam papers
- Exam data retention policy
- Statement on Tripos transparency
- Regulations for the Engineering Tripos
- University guide to undergraduate examinations
- University guidance for staff on examinations
- Note on plagiarism and academic misconduct

- Guidance on Departmental involvement in Examination Reviews

Guidelines for Examiners & Assessors: Part I information

Summary of duties

1. Examiners and Assessors are appointed, on the nomination of the Faculty Board, by the General Board. Examiners who have taken part in an examination shall be present at the final Examiners' meeting unless they are prevented by grave cause and granted dispensation in advance by the Vice-Chancellor. Assessors set papers or parts of papers and advise Examiners on the performance of candidates in their subjects. Assessors may at the request of the Chair be invited to attend meetings of Examiners for the purpose of consultation and advice, but shall not be entitled to vote.

Setting the paper for Part I

1. Part I papers are set jointly by the Examiner and Assessor, with an agreed division of effort.
2. Examiners and Assessors must consult the Lecturer(s) at an early stage, and certainly before any questions are set, in order to check that their proposed questions are appropriate. The Lecturer(s) should outline the central elements of the course and may suggest specific topics for examining. The Examiner should check with the Lecturer(s) if any special data books are required.
3. It must not be assumed that the treatment of topics in the syllabus will be the same as in previous years. Examiners should consult the reports of their immediate predecessors to ascertain how candidates coped with individual questions and what topics and styles of questions were found to be most difficult.
4. As the standard of questions may vary from year to year, it is recommended that Examiners check that their setting and marking have not been either unduly severe or unduly lenient (for target averages see the supplements). This should ensure that, after following Faculty Board's guidelines on the proportions of students in the various classes, the marks at class boundaries will roughly coincide with the goals set out in the Marking & Classing Criteria.
5. It is the responsibility of the Examiners to ensure that the papers are error-free. The Faculty Board recommends the use of a reading meeting and believes that at least two independent solutions to each question should be prepared. The Board of Examiners should decide whether or not an Examiner will be required to act as an additional 'second checker'.
6. Lecturers (as checkers) should provide **independent** cribs for the questions that relate to their part of the course by the specified deadline. These should be returned to the Examiner. The Lecturer should confirm directly to the Chair that he/she has provided a full independent crib.
7. Lecturers should be informed of any subsequent changes to the questions and both Examiners and Lecturers (as checkers) should sign off on the final version of the paper.
8. Examiners, after necessary consultation with Assessors, should provide feedback to the External Examiner on receipt of comments on their paper.

Structuring the questions

1. In Part I papers, the major part of each question should be straightforward, set on familiar material and free from quirks and pitfalls. Students who have attended the lectures and completed the examples papers should quickly recognise what is required. A useful format is the three-part question where candidates are asked:

(a) to provide a statement of principle;

(b) to perform a straightforward application, and;

(c) to probe more deeply a specific part of the problem.

2. In Part IA (a) and (b) will be sufficient. In Part IB questions may have all three parts but about two thirds of the credit should be allocated to (a) and (b).

Solutions and reports

1. The Faculty Board requires every Examiner to provide a written report on the examination to be sent to the Chair at the time the marks are handed in. A copy of the report is to be placed in the Examiner's file for the Examiner in the following year. Where the raw marks have been adjusted by the Examiner, the effect of the adjustment on those marks must be recorded in the report.
2. Examiners are required to provide solutions for their papers. The Faculty Board recommends to Examiners the practice of including in the solutions comments that may serve as a useful guide to future students. Specific comments may be added after each individual answer; alternatively the section of the Examiner's report that deals with individual questions could be reproduced on the last page of the solution.

Archibald Denny Prize

1. The Archibald Denny Prizes IA and IB shall be awarded annually by the Examiners to the candidate in each Part who has shown the greatest distinction in the Theory of Structures (Paper 2 in both IA and IB).

Guidelines for Examiners and Assessors: Part IB supplement

Character of the examinations

1. The character of the Part IB examination should reflect a transition from the straightforward 'prelim' style test of basic principles in Part IA to the more searching assessments of Parts IIA and IIB, where students will be tested on more advanced problems relating to engineering practice. With this in mind, it is recommended that questions should be structured so that about two-thirds of each question follows the IA style and is entirely straightforward. The remaining part should aim to be a little more demanding and should, as far as possible, integrate with and extend the earlier parts of the question. If this cannot easily be achieved, the question may be set in separate parts. In either case, setters and checkers should ensure that the greater part of each question is entirely straightforward.
2. The rubric for the two-hour papers (papers 1-7) should state that candidates are expected to attempt not more than four questions. Where appropriate, a paper may be divided into two or three sections that correspond to the main subject areas to be examined in the paper. The number of questions in the section should reflect the number of lectures in the corresponding subject areas.

Checking of the questions

1. The only checker is the course Lecturer (or Lecturers). It is essential that all Lecturers see the entire paper, even if they are only responsible for checking one question.

Target average

1. At the setting stage, Examiners should aim for a target average on the written paper in the range 60% to 65%. When coursework marks are included the overall average can be expected to increase by c.6%.
2. Checks should be made that the average mark is in line with the target average and the proportions in each class for the paper are broadly similar to the norm for the Tripos overall. Where there is a significant discrepancy the Chair should be consulted and consideration given to either modifying the marking scheme or otherwise adjusting the marks. If after consultation it is agreed that the marks should be scaled this should be done to the least degree consistent with producing the required change.

Rex Moir Prize

1. The Rex Moir Prize shall be awarded annually by the Examiners to the candidate who has shown the greatest distinction in that examination.

Archibald Denny Prize

1. The Archibald Denny Prize IB shall be awarded annually by the Examiners to the candidate who has shown the greatest distinction in the Theory of Structures (Paper 2) examination.

Heaviside Prize

1. The Heaviside Prize is awarded annually by the Examiners for Part IB of the Engineering Tripos to the candidate who has shown great distinction in Electrical Engineering (Paper 5) and Mathematical Methods (Paper 7) examinations.

Rayleigh Prize

1. The Rayleigh Prize is awarded annually by the Examiners for Part IB of the Engineering Tripos to the candidate who has shown great distinction in Mechanics (Paper 1) and Thermofluid Mechanics (Paper 4) examinations.

Additional information

- Practical information about Part I exams
- Form & conduct of the examinations
- Part IB Coursework and Exam Credit notice

Guidelines for Examiners & Assessors: Qualification Tests for accreditation by Professional Engineering Institutions

Summary

1. Examiners and Assessors are responsible for setting and marking the qualification tests and preparing the cribs.
2. The results of the tests will not affect the students' examination marks or classing.
3. Those students who fail the tests and are deemed not to have met the learning objectives required by the PEIs will be limited to the 'Engineering Science' Engineering Area and not receive an accredited MEng degree after Part IIB.

Setting the test for Part I

1. Questions should aim to examine the current year's work as listed in the objectives and syllabus for the module.
2. Tests should be set at a level of difficulty that will measure the students meeting the learning aims determined by the accrediting institutions.
3. The tests should be half the length of the Part I papers.
4. The three-part question structure used in Part I papers can be used for the tests.

Setting the test for Part II

1. Questions should aim to examine the current year's work as listed in the objectives and syllabus for the module.
2. Test questions should be set at a level of difficulty that will measure the students meeting the learning aims set by the accrediting Engineering Institutions.

Marking and scaling

1. The Examiner/Principal Assessor is responsible for the marking of the tests.
2. The tests will be marked pass/fail, with the pass mark set by the Examiner/Principal Assessor in consultation with the Chair to reflect the minimum requirement for meeting the learning objectives.
3. No scaling will be necessary.

Cribs and reports

1. Examiners and Assessors are required to provide cribs for the tests.
2. Brief reports on the tests should be provided by the Chair to the Deputy Head of Department for Teaching and Secretary to Faculty Board.