Examination Conventions 2016/17  
Preliminary Examination in Materials Science

1. INTRODUCTION

Examination conventions are the formal record of the specific assessment standards for the course or courses to which they apply. They set out how examined work will be marked and how the resulting marks will be used to arrive at a final result progression decision and/or classification of an award.

These conventions apply to the Preliminary Examination in Materials Science for the academic year 2016-17. The Department of Materials’ Academic Committee (DMAC) is responsible for approving the Conventions and considers these annually, in consultation with the examiners. The formal procedures determining the conduct of examinations are established and enforced by the University Proctors. These Conventions are a guide to the examiners and candidates but the regulations set out in the Examination Regulations have precedence. The Examination Regulations may be found at: http://www.admin.ox.ac.uk/examregs/.

The paragraphs below indicate the conventions to which the examiners usually adhere, subject to the guidance of other bodies such as the Academic Committee in the Department, the Mathematical, Physical and Life Sciences Division, the Education Committee of the University and the Proctors who may offer advice or make recommendations to examiners.

The examiners are nominated by the Nominating Committee* in the Department and those nominations are submitted for approval by the Vice-Chancellor and the Proctors. In Prelims the examiners are called “moderators”. Formally, moderators act on behalf of the University and in this role are independent of the Department, the colleges and of those who teach the MS M.Eng. programme.

2. RUBRICS AND STRUCTURE FOR INDIVIDUAL PAPERS

Each of the five papers in Prelims, comprising the three Materials Science papers (MS1, MS2 & MS3), the Maths for Materials Science paper, and the Coursework Paper, are weighted equally towards the overall total for the Preliminary Examination. The moderators set the papers, but are advised to consult the course lecturers. The course lecturers are required to provide draft questions and model answers if so requested by the moderators. There are no external examiners for Prelims. The assessed work for the practicals and the crystallography classes together constitute the Coursework Paper.

Written Paper Format

The Materials Science papers 1 - 3 comprise eight questions from which candidates must attempt five. Each question is worth 20 marks. The maximum marks available for each of these papers are 100.

The Prelims paper on Maths for Materials Science consists of two sections, candidates are required to answer all questions in Part A and 4 from Part B. The total marks available for this paper are 180; the mark achieved then being weighted by a factor of 0.555’ such that the paper contributes a maximum of 100 marks to the Preliminary Examination.

Coursework paper

The Coursework Paper comprises two elements of coursework: a set of eight reports of practical work as specified in the MS Prelims Handbook (normally each individual report within the set has been marked already as the laboratory course progresses); and a set of reports for crystallography (completed under the class schedule).

For formal submission of the practical coursework, the Examination Regulations stipulate that candidates are required to submit the Materials Practical Class reports to the Chair of Moderators by no later than 10 am on Friday of the sixth week of Trinity full Term. Further information on this is provided in the Materials Prelims Handbook.

The only types of calculators that may be used in examinations are from the following series:

- CASIO fx-83
- CASIO fx-85
- SHARP EL-531

Candidates are not permitted calculators in the Mathematics for Materials examination. SMP tables are provided in all Preliminary examinations.

* for the 2016-17 examinations the Nominating Committee comprised Prof Grant & Dr Taylor.
3. MARKING CONVENTIONS

3.1 University scale for standardised expression of agreed final marks

Agreed final marks for individual papers will be expressed using the following scale: 0-100

3.2 Qualitative criteria for different types of assessment

Qualitative descriptors, based on those used across the Mathematical, Physical and Life Sciences Division, are detailed below:

<table>
<thead>
<tr>
<th>Mark Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-100</td>
<td>The candidate shows excellent problem-solving skills and excellent knowledge of the material over a wide range of topics, and is able to use that knowledge innovatively and/or in unfamiliar contexts. The higher the mark in this band the greater will be the extent to which these criteria are fulfilled; for marks in the 90-100 range there will be no more than a very small fraction, circa 5-10%, of the piece of work being examined that does not fully meet all of the criteria that are applicable to the type of work under consideration. The 'piece of work' might be, for example, an individual practical report, a question on a written paper, or a whole written paper.</td>
</tr>
<tr>
<td>60-69</td>
<td>The candidate shows good or very good problem-solving skills, and good or very good knowledge of much of the material over a wide range of topics.</td>
</tr>
<tr>
<td>50-59</td>
<td>The candidate shows basic problem-solving skills and adequate knowledge of most of the material.</td>
</tr>
<tr>
<td>40-49</td>
<td>The candidate shows reasonable understanding of at least part of the basic material and some problem solving skills. Although there may be a few good answers, the majority of answers will contain errors in calculations and/or show incomplete understanding of the topics.</td>
</tr>
<tr>
<td>30-39</td>
<td>The candidate shows some limited grasp of basic material over a restricted range of topics, but with large gaps in understanding. There need not be any good quality answers, but there will be indications of some competence.</td>
</tr>
<tr>
<td>0-29</td>
<td>The candidate shows inadequate grasp of the basic material. The work is likely to show major misunderstanding and confusion, and/or inaccurate calculations; the answers to most of the questions attempted are likely to be fragmentary.</td>
</tr>
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3.3 Verification and reconciliation of marks

During the marking process the scripts of all written papers remain anonymous to the markers. Each written paper is marked by a single moderator. Those papers identified by the moderator as having marks close to the boundaries of pass/fail and distinction/pass will be fully marked by a second moderator, who has sight of the first moderator’s marks, but arrives at a formal independent mark. If the difference in these marks is small (~10% of the total available for the question, 2-3 marks for most questions), the two marks are averaged, with no rounding applied. Otherwise the moderators identify the discrepancy and read the answer again, either in whole or in part, to reconcile the differences. If after this process the moderators still cannot agree, they seek the help of the Chair, or another moderator as appropriate, to adjudicate. For all other papers, the second moderator checks that the overall mark for each question is consistent with one of three sets of descriptor(s), namely those for <40, 40 to 69, or >= 70 as appropriate. An integer total mark for each paper is awarded, where necessary rounding up to achieve this.

First year practicals are assessed on a continual basis by the senior demonstrators. The work for the twelve crystallography classes is assessed by the Crystallography Class Organiser(s), the first of these classes being assessed formatively only. Satisfactory performance in the practical work and in the crystallography classes is defined in the MS Prelims Handbook. The Practicals Class Organiser reviews the marks for the practicals before they are considered by the moderators, drawing to their attention (i) any anomalously low or high average marks for particular practicals and (ii) any factors that impacted on the practical course, such as breakdown of a critical piece of equipment. The moderators review the crystallography and practical marks.

3.4 Scaling

Adjustment to marks, known as scaling, normally is not necessary for prelims.
3.5 Short-weight convention and departure from rubric

The rubric on each paper indicates a prescribed number of answers required (e.g. "candidates are required to submit answers to no more than five questions"). Candidates will be asked to indicate on their cover sheet which questions, up to the prescribed number, they are submitting for marking. Excepting section A of the Maths paper, for which all questions are compulsory, if the cover slip is not completed then the examiners will mark the questions in numerical order by question number. If the candidate lists more than the prescribed number of questions then questions will be marked in the order listed until the prescribed number has been reached. The examiners will NOT mark questions in excess of the prescribed number. If fewer questions than the prescribed number are attempted, (i) each missing attempt will be assigned a mark of zero, (ii) for those questions that are attempted no marks beyond the maximum per question indicated under section 2 above will be awarded and (iii) the mark for the paper will still be calculated out of 100 for MS1, MS2 & MS3 and out of 180 for the Maths for Materials Science paper.

3.6 Penalties for late or non-submission

The Examination Regulations stipulate a specific date for submission of the practical coursework. Rules governing late submission of the practical element of coursework and any consequent penalties are set out in the ‘Late submission and non-submission of a thesis or other written exercise’ clause of the ‘Regulations for the Conduct of University Examinations’ section of the Examination Regulations (Part 14, ‘Late Submission, Non-submission, Non-appearance and Withdrawal from Examinations’ in the 2016/17 Regulations).

Under the provisions permitted by the regulation, late submission of an element of coursework, as defined above, for the Preliminary Examination in Materials Science will normally result in one of the following:

(a) With permission from the Proctors under para 14.7 no penalty.
(b) With permission from the Proctors under paras 14.9 and 14.10, for the first day or part of the first day that the work is late a penalty of a reduction in the mark for the coursework in question of up to 10% of the maximum mark available for the piece of work, and for each subsequent day or part of a day that the work is late a further penalty of up to 5% of the maximum mark available for the piece of work; the exact penalty to be set by the Examiners with due consideration given to the circumstances and to any advice given in the Proctors’ “Notes for the Guidance of Examiners and Chairmen of Examiners”. The reduction may not take the mark below 40% of the maximum available for the piece of work.
(c) Where the candidate is not permitted by the Proctors to remain in the examination, he or she will be deemed to have failed the examination as a whole.
(d) Where, without the permission of the Proctors under paras 14.9 and 14.10, work is proffered so late that it would be impractical to accept it for assessment a mark of zero shall be recorded and, as per the Special Regulations for the Preliminary Examination in Material Science, normally the candidate will have failed the Examination as a whole.
(e) Where no work is submitted a mark of zero shall be recorded and, as per the Special Regulations for the Preliminary Examination in Material Science, normally the candidate will have failed the Examination as a whole.

Where an element of coursework is not submitted or is proffered so late that it would be impractical to accept it for assessment the Proctors may, exceptionally, under their general authority, and after (i) making due enquiries into the circumstances and (ii) consultation with the Chairman of the Moderators, permit the candidate to remain in the examination. In this case for the element of coursework in question (i) the Examiners will award a mark of zero and (ii) dispensation will be granted from the Regulation that requires a minimum mark of 40% if the candidate is not to fail the examination as a whole.

Elements of coursework comprising more than one individual piece of assessed coursework

Penalties for late submission of individual practical reports are set out in the MS Prelims Handbook and are separate to the provisions described above.

The consequences of late submission of or failure to submit individual practical reports or individual pieces of Crystallography coursework are set out in the Prelims Handbook (sections 9.6 and 10 of the 2016/17 version) and are separate to the provisions described above.

3.7 Penalties for over-length work and departure from approved titles or subject-matter

This is not applicable to the Prelims examination.
3.8 Penalties for poor academic practice

Substantial guidance is available to candidates on what constitutes plagiarism and how to avoid committing plagiarism (see Appendix D of the Materials Prelims Handbook and https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism)

If plagiarism is suspected, the evidence will be considered by the Chair of the Moderators (or a deputy). He or she will make one of three decisions (http://www.admin.ox.ac.uk/media/global/wwwadminoxacuk/localsites/educationcommittee/documents/policy/guidance/Plagiarism_procedures_guidance.pdf):

(a) No evidence, or insufficient evidence, of plagiarism – no case to answer.

(b) Evidence suggestive of more than a limited amount of low-level plagiarism – referred to the Proctors for investigation and possible disciplinary action.

(c) Evidence proving beyond reasonable doubt that a limited amount of low-level plagiarism has taken place – in this case the Board of Moderators will consider the case and if they endorse the Chair’s judgement that a limited amount of low-level plagiarism has taken place will select one of two actions:

(i) Impose a penalty of 10% of the maximum mark available for the piece of work in question. For a student who remains on course in addition there will be a requirement to demonstrate to their college Materials Tutorial Fellow that in the period between the present offence and the next submission of work for summative assessment they have followed to completion the University’s on-line course on plagiarism (https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism).

(ii) No penalty, but a warning letter to be issued to the candidate explaining the offence, indicating that on this occasion it has been treated as a formative learning experience, and that the present incident will be taken into account should there be a further incidence of plagiarism. For a student who remains on course in addition there will be a requirement to demonstrate to their college Materials Tutorial Fellow that in the period between the present offence and the next submission of work for summative assessment they have followed to completion the University’s on-line course on plagiarism (https://www.ox.ac.uk/students/academic/guidance/skills/plagiarism).

4. PROGRESSION RULES AND CLASSIFICATION CONVENTIONS

4.1 Qualitative descriptors

Qualitative descriptors, based on those used across the Mathematical, Physical and Life Sciences Division, are given below:

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4.2 Final outcome rules (Distinction, Pass, Fail)

The pass/fail border is at 40%.

The Moderators may award a distinction to recognise especially strong overall performance. Normally (i) at their discretion, the moderators may specify a mark in the range 70% to 79% such that candidates with an overall mark greater than or equal to this specified mark are awarded a distinction and (ii) a distinction will be awarded to all candidates with an overall mark of 80% or greater.

4.3 Progression rules

To pass the examination and progress to Part I, candidates are required to satisfy the moderators in all five papers, either at a single examination or at two examinations in accordance with the re-sit arrangements detailed below.

Failure in one or two written papers may be compensated by better performance in other written papers provided the candidate obtains at least 35% on the failed paper. Failure of three papers precludes compensation. Where compensation is permitted, only those marks in excess of 40 on a passed paper may be used towards compensation and normally this shall be at a rate of 3 marks to every deficit mark to be compensated.

For example, if two written papers are passed and marks of 36% and 38% are obtained in the remaining two written papers then the total for the four written papers must be at least 172 marks \( (36 + 38 + 2 \times 40 + 3 \times (4+2)) \) for both failures to be compensated.

The Moderators have the authority to use their discretion and consider each case on its merit.

Failure of the coursework paper will normally constitute failure of the Preliminary Examination. Materials coursework cannot normally be retaken. Exceptionally a candidate who has failed the coursework may be permitted jointly by the Moderators and the candidate’s college to retake the entire academic year.

5. RESITS

Candidates who pass the coursework paper and fail one or two written papers will be asked to resit only those written papers.

Candidates who pass the coursework paper and fail more than two written papers will be asked to resit all four written papers.

The resits usually take place in September. To pass a resit paper the candidate must obtain at least 40%, and normally no compensation is allowed. There is only one opportunity to resit the examination, and failure to pass a resit examination normally results in the candidate being prohibited from progressing to Part I. Exceptionally, a college may allow a student to suspend studies for a year and take Prelims a second time the following June.

The Moderators have the authority to use their discretion and consider each case on its merit. In such cases they will take into account a candidate’s profile across all elements of assessment together with, subject to guidance from the Proctors where appropriate, any other factors they deem to be relevant.

6. FACTORS AFFECTING PERFORMANCE

Where a candidate or candidates have made a submission, under Part 13 of the Regulations for Conduct of University Examinations, that unforeseen factors may have had an impact on their performance in an examination, the board will meet to discuss the individual applications and band the seriousness of each application on a scale of 1-3 with 1 indicating minor impact, 2 indicating moderate impact, and 3 indicating very serious impact. When reaching this decision, examiners will take into consideration the severity and relevance of the circumstances, and the strength of the evidence. Examiners will also note whether all or a subset of papers were affected, being aware that it is possible for circumstances to have different levels of impact on different papers. The banding information will be used at Part B of the meeting of the internal examiners at which the raw examination results are reviewed. Normally, this FAP meeting will take place after Part A of the meeting of the internal examiners at which the raw examination results are reviewed. Further information on the procedure is provided in the Policy and Guidance for examiners, Annex C and information for students is provided at www.ox.ac.uk/students/academic/exams/guidance. It is very important that a candidate’s FAP submission is adequately evidenced and, where appropriate, verified by their college; the University forbids the Board of Examiners from seeking any additional information or evidence.
7. DETAILS OF EXAMINERS AND RULES ON COMMUNICATING WITH EXAMINERS

The Moderators in Trinity 2017 are: Prof Harish Bhaskaran, Prof. Kyriakos Porfyakis, Prof. Susie Speller (Chair) and Prof. Andrew Watt. It must be stressed that to preserve the independence of the Moderators, candidates are not allowed to make contact directly about matters relating to the content or marking of papers. Any communication must be via your college, who will, if the matter is deemed of importance, contact the Proctors. The Proctors in turn communicate with the Chairman of Prelims.

Annexe

Summary of maximum marks available to be awarded for different components of the MS Preliminary Examination in 2017:

<table>
<thead>
<tr>
<th>Component</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials Science 1: Structure of Materials</td>
<td>100</td>
</tr>
<tr>
<td>Materials Science 2: Properties of Materials</td>
<td>100</td>
</tr>
<tr>
<td>Materials Science 3: Transforming Materials</td>
<td>100</td>
</tr>
<tr>
<td>Mathematics for Materials Science</td>
<td>100</td>
</tr>
<tr>
<td>Coursework Paper:</td>
<td></td>
</tr>
<tr>
<td>Crystallography Classes</td>
<td>50</td>
</tr>
<tr>
<td>Practicals</td>
<td>50</td>
</tr>
</tbody>
</table>

**Total**                             **500**