Examination Conventions in Chemistry 2016/17

Introduction

These conventions have been approved by the Chemistry Academic Board (CAB) and the MPLS Division. They should be read together with the current *Examination Regulations* (available online at http://www.admin.ox.ac.uk/examregs/information/contents/) and the Undergraduate Course Handbook (http://teaching.chem.ox.ac.uk/Data/Sites/58/media/courseinfo/undergradhandbook2016.pdf). CAB reviews the conventions, regulations and handbook annually, and the Examination Conventions may be subject to minor adjustment during any academic year. The Examiners have discretion to deviate slightly from what is laid down, where appropriate and according to circumstances.

If any student or academic staff member finds any part of the Regulations, Conventions or Handbook obscure, enquiries should be addressed to the Chairman of CAB, through the Faculty office in the first instance (nina.jupp@chem.ox.ac.uk). Such enquiries are welcome, as clarification helps everybody. It is not appropriate to address Chairmen of Examiners on such matters.

Details of the membership of the examination boards can be found at the following web address: https://intranet.chem.ox.ac.uk/committee-members.aspx. The Part IA, Part IB and Part II boards each consist of 9 internal and 3 external examiners in addition to the chair. The Prelims board consists of 8 examiners, one of whom is also chair. **Candidates must not contact examiners or the chair on examination matters directly under any circumstances.**

Prelims

See especially the relevant part of the *Examination Regulations:* (http://www.admin.ox.ac.uk/examregs/2016-17/pexaminchem/studentview/), but general regulations found elsewhere also apply.

Each paper is set as a two and a half hour exam, except for the Organic Chemistry paper, which will be a three hour exam.

Each paper will be marked out of 100, according to the outline marking scheme printed on the question paper. Marks may be rescaled if necessary. All Prelim papers have equal weightings.

The pass mark on each paper will be 40. A fail mark in Mathematics of 38 or higher will be allowed as a compensated pass, provided that the candidate passes all three Chemistry papers and has an aggregate mark on all four papers of 180 (45%) or more. The aggregate will be the sum of all four agreed marks. No compensation will be allowed on any of the three Chemistry papers.

Distinctions are usually awarded to candidates with an aggregate score of about 280 (70%) or higher, approximately the top 30% of candidates.

Except in special circumstances no candidate may pass Prelims without having completed satisfactorily the practical requirement. The first year practical requirement consists of 11 days in each of the three teaching labs and a compulsory IT exercise, including an introductory day in each lab.

A candidate who has failed in one or two subjects may offer those subjects at a subsequent examination, and will be deemed to have passed all Parts of Prelims if they pass these resit examinations.

A candidate who has failed in three or four subjects may retake Prelims at a subsequent examination, but must offer all four subjects and will not be deemed to have passed Prelims unless they pass all four resit examinations.

The maximum number of attempts permitted at Prelims is two.

Progression and classification

No student may enter for Part IA unless they have already passed all parts of Prelims. Prelims marks do not count towards the classification of the degree.

Parts IA and IB, together with the second and third year practical course and Part II, are conceived as parts of one examination, the Second Public Examination.

There will be no pass/fail mark in Part IA; all candidates who complete this Part of the examination will have their marks carried forward to Part IB, and candidates will not be permitted to take Part IA again. Practical work will not be taken into account for Part IA.

After Part IB a decision is made to identify those who are worthy of Honours. This decision is based on an aggregate of Part IA and Part IB exam marks and marks for the practical course with a relative weighting of 15:50:10 respectively. The award of Honours is also conditional on completion of the minimum practical requirement.

The views of the External Examiners will be considered carefully before any candidate is denied Honours. The honours threshold is expected to be about 40%. Students below this borderline may be called for a *viva voce* examination with an examination board normally consisting of the Chair of Examiners and the External Examiners.

Candidates who are judged not to be worthy of honours may not enter for Part II. The examiners may recommend that they be awarded a B.A. Pass Degree or that they fail outright. In recent years the number of outright failures in Part I has been 0 or 1 and the number of Pass degrees awarded has been 0-2 (total candidate numbers were of the order 150-190).

Candidates who are judged worthy of honours but who do not wish to continue to Part II may graduate with an unclassified B.A. Honours degree.

The final degree classification for those worthy of honours depends on performance in Parts IA, IB, the practical course and Part II together, weighted 15:50:10:25 respectively.

Parts IA and IB

See *Examination Regulations*,

(http://www.admin.ox.ac.uk/examregs/2016-17/hschoofchem/studentview/),

but general regulations found elsewhere also apply.

Part IA consists of three General Papers, and is taken at the end of year two. Each General Paper is set as a two and a half hour exam, with 10 minutes reading time, and students will be expected to attempt six out of eight questions.

Part IB consists of six General Papers and one Options Paper, and is taken at the end of year three. General Papers are three hour exams and students will be expected to attempt four out of six questions. The length and difficulty of the questions will be the same as when the exams were two and a half hours, but candidates will be given three hours to attempt them, giving time for reading, reflection and reviewing answers. Candidates are discouraged from wasting the extra time by attempting additional questions. The Options Paper is three hours, plus 10 minutes reading time, and students will be expected to attempt three questions from a wide choice.

All papers will be marked according to the outline marking scheme shown on the question paper. The mark scheme is a guide, and examiners have the discretion to vary it if necessary. Marks may be rescaled to ensure that they conform to the University Standardised Mark (USM) scale. The mark will be reported as a percentage. The three General Papers in Part IA have equal weight, and contribute 15% to the final degree classification. The six General Papers in Part IB have equal weight, and contribute 42% towards the final degree. The Options paper contributes 8%.

Practical course

Except in special circumstances, no candidate may pass Part IB without having completed satisfactorily the second and third year practical courses, and the IT practicals (a reduced third year course may be offered if a Supplementary Subject has been passed, as outlined below).

The second year practical course consists of a stint of 10 days (60 credit hours) in each of the three laboratories. The normal third year practical stint is 12 days (72 credit hours), with a free choice of experiments across the three laboratories, plus the third year IT practical. A candidate who has not completed the core requirement outlined above may still qualify for a Pass Degree if they have satisfactorily completed at least 20

days of the second and third year laboratory course in addition to the first year requirement and provided that he/she satisfies the examiners in the Part IB examination. Below this limit a candidate will automatically fail Part IB.

Supplementary subjects

A pass or distinction in a Supplementary Subject may be offered as an alternative to 6 days (36 credit hours) of the third year practical requirement. While the majority of candidates who choose to take a Supplementary Subject will take a single course during their second year, a Supplementary Subject may be taken in years 2, 3, or 4, with the proviso that a maximum of three Supplementary Subjects may be passed. Good marks in Supplementary Subjects will be recognised by the allocation of extra credit for the final assessment after Part II. For science based subjects this applies to marks of 60% or more, and for modern languages a mark of 70% or more.

These bonus marks will be credited for each Supplementary Subject passed at the appropriate level, but only one Supplementary Subject pass may be offered in lieu of practical work. Candidates who achieve a pass may not retake the same Supplementary Subject in a subsequent year.

Part II

See *Examination Regulations:*

(http://www.admin.ox.ac.uk/examregs/2016-17/hschoofchem/studentview/)

Part II is examined by Thesis and by *viva voce* examination. The Chairman of the Part II Examiners will circulate instructions on the preparation of theses and information about other pertinent matters in Hilary Term. Examiners may refuse to examine a thesis if it fails to conform to these instructions.

Theses will be read by two Examiners, each of whom will assign a mark out of 100. Because of the wide range of subject matter in Part II projects it is not appropriate to prescribe a single marking scheme, but a set of guidelines for examiners is available on the departmental web page at http://teaching.chem.ox.ac.uk/assessment-guidelines.aspx.

The two principal readers of the thesis will also act as examiners in the viva, which will be marked out of 20. Thesis marks may only be altered following the viva with the agreement of a third examiner and the Chair. Other than in exceptional circumstances, the viva cannot result in a decrease in the thesis marks.

The pass mark for Part II shall be an overall score of 40% (88/220).

Supervisors will be asked to report on the work of all candidates and on any special difficulties or advantages the candidates may have had. No part of the Part II mark is given by the supervisor or allocated to the supervisor's report.

Supplementary Subjects may be taken during the Part II year, and mark bonuses will be allocated for good performance, as outlined previously. However, no retrospective compensation for shortfalls in practical work or IT work reported to the Part IB examiners will be allowed: candidates who have not completed the practical requirement will not have been adjudged worthy of honours and will not be permitted to start the Part II year.

The two thesis marks and the viva mark will be added to give the Part II mark. The Part II mark will be aggregated with the total (scaled) Part I mark with a weighting 25:75, and expressed as a mark out of 1000. Bonuses for good performance in Supplementary Subjects will be added after aggregation.

Part II theses must be submitted to the Examination schools before the deadline of noon on the Friday of 7th week. Applications for late submission, for example because of illness, must be made to the Proctors. All unauthorised submissions after the deadline will be reported to the Proctors for investigation of the reasons for late submission, and in addition to any sanction the Proctors may impose, an academic penalty will be applied to the Part II mark at the discretion of the examiners, according to the following scheme.

Lateness	Penalty marks
Up to 5 pm on the Friday of 7th week	2.2 (1%)
Up to 5 pm on the Monday of 8th week	11 (5%)
Up to 5 pm on the Tuesday of 8th week	22 (10%)
Up to 5 pm on the Wednesday of 8th week	44 (20%)
Up to noon of the Friday of 8th week	66 (30%)
More than a week late	Fail

For example, a thesis given an overall Part II mark of 141/220 (64%) by the examiners on the basis of the thesis and the viva, but submitted on the Monday of 8th week will be penalised 11 marks (5%) and awarded a final mark of 130/220 (59%). Any penalty assessed will be capped so that it does not take the Part II mark below the pass mark, 40%, with the exception of theses more than a week late. Candidates failing Part II remain entitled to the unclassified BA honours degree they qualified for at Part IB.

Medical certificates

Medical and other certificates will be considered by the Examination board for the set of examinations they apply to and in each subsequent year up to Part II. Most commonly, action will be taken when the candidate's full results are available after Part II. Medical certificates will also be considered for candidates at the Pass/Fail or Pass/Honours borderline after Part IB. Examination boards may take account of medical and other certificates covering a single paper by an appropriate adjustment of the mark or by disregarding that mark in deciding a classification.

Marking conventions

All written papers are marked according to an outline marking scheme printed on the examination paper. Examiners have discretion to vary this scheme as necessary. Papers will either be double-marked or the marks checked against the marking scheme by a second examiner. University Standard Marks (USM) will be used for each paper, in which class boundaries are drawn at or close to 70%, 60%, 50% and 40%, i.e. marks 70% and above are first class, marks between 60% and 70% are 2.1, etc. Marks may be rescaled (see below). If scaling is used, details will be provided in the Chair's report. Any scaling of individual papers at Part IA, Part IB or Part II will be applied in the year the examination is taken.

A mark of zero shall be awarded for any question or parts of questions that have not been answered by a candidate, but which should have been answered.

All parts of questions answered will be marked unless clearly crossed out by the candidate. The best set of marks consistent with the examination rubric will be taken, e.g. if the number of questions specified by the rubric is 4 and a candidate answers 5, then the best 4 marks will be taken and the lowest mark discarded. Students are strongly advised not to attempt more questions than required: time spent doing an extra question that will not count towards the total is time wasted. Any spare time is much better spent in checking and correcting answers.

Errors may be carried forward at the discretion of the examiner, depending on the nature and severity of the error. Similarly, partial credit may be given at the discretion of the examiner for incorrect but reasonable answers, particularly if they demonstrate that the candidate is thinking through the problem in a rational way. These are both matters of academic judgement.

Discrepancies between the marks awarded by different examiners will be resolved as follows. Marks will be averaged if they differ by less than 10% of the maximum available, with a third marker arbitrating if they differ by more than 10% and the markers cannot agree.

Practical marks will be awarded according to a detailed scheme that assesses the pre-lab, practical skills, results and the write-up. The relative weights of these components vary from experiment to experiment. Practical marks may be scaled to ensure uniformity of standard between experiments and markers. The final sign-off will be performed by a senior demonstrator or approved by a lab manager. Marks for practicals submitted for marking beyond the 2-week deadline without good reason will be capped at 40%. Practicals submitted for marking more than 4 weeks after the start without good reason will be awarded zero marks. Practicals must

be submitted for marking, and judged satisfactory, in order to be counted towards the Part I requirement (252 or 216 credit hours, according to whether a Supplementary Subject has been passed).

The aggregate practical mark will be reported as a percentage, and will be a weighted average of the marks for all the practicals that contribute to the appropriate requirement. The relative weight of each practical in this average will be advertised in the laboratory manual. Detailed rules for the practical course can be found on the website at http://course.chem.ox.ac.uk/practicals.aspx.

Scaling of examination marks

It is university policy to award University Standard Marks (USMs) for examinations, so that a first class performance corresponds to a mark of 70% or more, an upper second class mark is between 60% and 70%, a lower second class mark between 50% and 60% and a third class mark between 40% and 50%. Examination marks may be scaled for any or all of the following reasons:

(a) a paper was easier or more difficult than in previous years;

(b) an option was more or less difficult than other options taken by students in a particular year;

(c) a paper has generated a spread of marks which is not a fair reflection of student performance on the University's standard scale for the expression of agreed final marks.

Scaling is not automatic. The decision about whether to scale, the extent of the scaling and the method of scaling will be made by the examination board according to their academic judgement.

The choice of scaling method will depend on an analysis of the examination scripts, the marks distribution, marks obtained on the other papers taken by the candidates in question, the historical record and the class descriptors. For example, if an examination has been harder than expected, and this has persisted across the whole school, as judged by a cumulative sum analysis, then a straightforward linear scaling may be selected. However, if the best candidates have been less affected by the problem, but the majority of candidates have found the examination too hard, then regular scaling may be employed. This is a single parameter scaling, based on the theory of regular solutions: $y = x\exp\left(\alpha(100-x)^2\right)$.

Classification

The class borderlines will be drawn at or close to 70%, 60%, 50% and 40%. The Examination Board will have the discretion to decide the exact borderlines, but they will not normally be higher than these norms, nor more than 1% lower. Each paper will contribute the following proportions to the maximum aggregate mark:

Each Part IA paper	5%
Each Part IB General paper	7%
Part IB Option paper	8%
Part I Practical course	10%
Part II	25%

It is expected that the percentages of the classes awarded will be in the ranges of recent years, i.e. I, 33-42%; IIi, 42-50 %; IIii, 10-15%; III, 0-5%. These ranges are not mandatory: occasionally a candidate's thesis and viva are deemed inadequate for any class of M.Chem. degree. Such candidates remain entitled to the unclassified B.A. Honours degree gained after Part IB.

The following Qualitative Descriptors of Classes have been adopted:-

Class	General	Mark range	Problems	Part II and essays
Class 1	Excellent problem-solving skills and excellent knowledge of the material over a wide range of topics, and ability to use that knowledge in unfamiliar contexts.	90% - 100%	Complete understanding, formulation correct, all steps and assumptions explained properly. Technically without fault.	High degree of commitment to the project. Clear evidence of initiative and independence. Excellent organisation, logical development, thorough critical analysis of literature and data, excellent presentation.
		80% - 90%	Excellent understanding, formulation correct, clear explanations, very few errors.	Strong intellectual input into design and implementation of project. Excellent, original, well written and structured. Critical analysis of data and command of the literature. High quality presentation.
		70% - 80%	Very good understanding, formulation correct, principal steps clear, any errors are minor.	Clear evidence of intellectual input and engagement with project. Good understanding of the topic and the literature. Critical analysis of data. Well written and clearly structured.
Class 2.1	Good or very good problem-solving skills, and good or very good knowledge of much of the material over a wide range of topics.	60% - 70%	Sound to good understanding, principal steps explained. Some errors.	Evidence of some intellectual input. Competent and coherent writing. Good presentation, literature knowledge and analysis of data.
Class 2.2	Basic problem-solving skills and adequate knowledge of most of the material.	50% - 60%	Adequate understanding, not all steps explained and maybe some gaps in logic. Some errors leading to incorrect or incomplete answers.	Routine treatment of data, literature coverage may have gaps, writing competent, but little sign of critical thinking or intellectual input.
Class 3	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.	40% - 50%	Incomplete understanding and formulation. Steps not explained, assumptions not stated. Errors lead to impossible answers. Lack of critical thought.	Shallow, narrow approach. Poor understanding and little sign of thought in selection of material or structure of report. Conclusions may be lacking or flawed.
Pass	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.	30% - 40%	Limited understanding, large gaps. Some sign of thought, but little actually correct.	Little evidence of understanding or attempt to approach the topic.
Fail	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 only.	< 30%	Inadequate understanding, fragmentary answers.	No engagement with the project. No sign of effort or thought

The interpretation of these Descriptors is at the discretion of the Examiners. For problem questions answers may be very patchy, excellent in some places and erroneous or missing in others, it is therefore hard to apply these descriptors to problems, although it should still be a helpful check list.