

APPENDIX 1:

University regulations governing the examinations for Part IB of the NST

23. (a) There shall be separate examinations set for each subject, as specified below:

(i) two written papers of three hours:

*Animal Biology

*Chemistry A

*Chemistry B

*Ecology

*History and Philosophy of Science

*Materials Science

*Mathematics

*Physics A

*Physics B

(ii) two written papers, one of two hours and one of three hours, and a practical examination:

Physiology

(iii) two written papers of three hours and a practical examination:

Biochemistry and Molecular Biology

Cell and Developmental Biology

*Experimental Psychology

*Earth Sciences A

*Earth Sciences B

*Plant and Microbial Sciences

(iv) two written papers, one of one hour and one of three hours, and a practical examination:

Neurobiology

*Pharmacology

(v) two written papers, one of one and a half hours and one of three hours, and a practical examination:

Biology of Disease

The practical examination (where such exists) shall be as follows: in Plant and Microbial Sciences, it shall be of one and a half hours' duration; in Physiology it shall be of one hour and twenty minutes' duration; in Experimental Psychology and Neurobiology, it shall be of one and a half hours' duration; in Earth Sciences A and Earth Sciences B, it shall be in two parts, one of three hours' duration and one of one and a half hours' duration; in all other subjects, it shall be of three hours' duration.

(b) A candidate who offers one or more of the subjects marked with an asterisk shall, in addition to the written and practical examinations, be required to submit records of practical work and/or fieldwork for each subject. Such records shall be presented for the inspection of the Examiners on a date or dates to be announced by the Head of the Department concerned; they shall bear the signatures of the teachers under whose direction the work was carried out.

(c) In assigning marks for the examinations in Earth Sciences A and Earth Sciences B, the Examiners may, at their discretion, take account of the records of practical work and/or fieldwork (where such exist) submitted by candidates. In assigning marks for the examination in all other subjects, the Examiners shall take account of the records submitted by candidates (where such exist). Assessment shall be undertaken by the Examiners or, for the following subjects, be provided to the Examiners from the following persons:

Subject

Animal Biology

Chemistry A

Chemistry B

Provider of assessment

Head of the Department of Zoology

Head of the Department of Chemistry

Head of the Department of Chemistry

Experimental Psychology

Materials Science

Physics A

Physics B

Head of the Department of Psychology

Head of the Department of Materials Science and
Metallurgy

Head of the Department of Physics

Head of the Department of Physics

APPENDIX 2:

Marking guidelines for examinations in the Natural Sciences Tripos

Part IB

Examiners are nominated by the various Faculties and Departments who contribute to teaching on the Tripos and are formally appointed by the General Board. In each subject, there is a Senior Examiner and other appointed Examiners and Assessors who are responsible for setting the papers and marking the scripts. There is also a Chairman of Examiners who, along with the Senior Examiners for each subject, assigns classes to candidates and produces the class list and final markbooks.

Marks from individual subjects

In each subject, the Examiners produce a mark out of 100 for each candidate using the local subject examination processes which may include necessary scaling.

Since the examinations in Easter 2014, there have been targets for class distributions in individual subjects. The default target distribution is such that **60% of all candidates taking all papers of a subject shall obtain marks of 60.0 or above and 20% of all candidates taking all papers of a subject shall obtain marks of 70.0 or above.**

The candidates will also be given both a Class in each subject and a value which indicates their position within the rank order of candidates in each subject. This rank statistic will be a *percentile rank*, such that the candidate with 100% is that with the highest mark and that with 0% the one with the lowest mark; all other candidates will fall between these values, the interval being determined by the number of candidates. The Subject Class of each candidate will reflect their final subject mark (after scaling if employed).

Subject Class	Subject mark
1 st	69.95 or over
II.1	59.95 or over
II.2	49.95 or over
3 rd	39.95 or over
Fail	Below 39.95

The Senior Examiner in each subject will determine the percentages of candidates scoring 60.0 and above and 70.0 and above given by the marks awarded by the examiners and assessors.

The following ranges will satisfy the general target:

Number of candidates for the subject	Percent candidates scoring ≥ 70.0	Percent candidates scoring ≥ 60.0
40 or more	18 - 22%	58 - 62%
20 -39	15 - 25%	50 - 70%
Less than 20	10 - 30%	40 - 80%

If the mark distribution is within the appropriate ranges, the Senior Examiner should submit the marks, no further processing is necessary.

In the event that either or both criteria are not met, the Senior Examiner may submit marks outside these limits if they are justified by the cohort performance at IA. The purpose of this flexibility is to take account of well-documented differences in the prior attainment of cohorts of candidates taking different NST IB subjects. Two values will be provided by the Education section to the Senior Examiner in a sealed envelope in advance of the examination. These will represent the percentage of candidates taking the relevant NST IB subject that were placed in the First Class in NST IA (the *F* value) and the percentage that ranked in the top 60% of all candidates in

NST IA (the C value). These should be compared to the percentage of candidates with *raw marks* ≥ 70.0 (H) and the percentage of candidates with *raw marks* ≥ 60.0 (R).

Where H and F do not differ by more than 2% (e.g. $F=26.2$ gives a range of acceptable H values: $24.2 \leq H \leq 28.2$), or H is closer to 20.0 than F (i.e. $F \leq H \leq 20.0$ or $20.0 \leq H \leq F$) then the first target will have been met. Similarly, where R and C do not differ by more than 2% (e.g. $C=66.2$ gives a range of R values: $64.2 \leq R \leq 68.2$), or R is closer to 60.0 than C (i.e. $C \leq R \leq 60.0$ or $60.0 \leq R \leq C$) then the second target is met.

If both targets (for percentage of candidates scoring ≥ 70.0 and ≥ 60.0) are met, the Senior Examiner should submit the raw marks, no further processing is necessary. The two targets should be assessed independently; it is entirely acceptable for one to be met by matching the default value and the other to be met by matching the cohort-adjusted value.

If the raw mark distribution does not meet these criteria, the Senior Examiner will scale the marks according to the procedure in Appendix 6, before submitting them to the Chairman.

Note: The sealed envelope containing the cohort values should only be opened if the subject examiners agree that the general target cannot be met. In their final reports, Senior Examiners should state at what point the envelope was opened and the scaling that was subsequently performed.

Submitting marks

The final subject marks will be expressed to one decimal place in the final markbook, but as there may be intermediate stages of manipulation it is required that all marks from individual subjects (both the individual papers and the total) be submitted **with full precision but displayed to one decimal place**.

Classing procedure

The overall Class List will be prepared by the following method. Candidates will be first placed into classes by reference to their subject classes attained, according to the lookup table shown in Appendix 3. In general, the principle employed is that the candidate receives the median of his/her subject classes. A second consideration is given to the arithmetic mean of the candidates' subject rank percentiles; candidates with an average percentile rank of $\geq 80\%$ will be classed in the First Class, those between 80% and 40% in the Upper Second Class and those between 40% and 20% in the Lower Second Class. Where the two methods produce different outcomes, candidates will be placed in the higher of the two resulting classes.

Candidates will be ordered into a rank order within classes by their mean percentile ranks.

If the final meeting of examiners decide that the procedures used produce results which the meeting agree are unacceptable in terms of deviation from established norms, they may adjust the results. A formal vote should be recorded on any such decision.

APPENDIX 3:

The summary of subject classes will be translated into an overall NST class by reference to the following table.

Subject classes					Overall Class
1	2	2.2	3	F	
3	0	0	0	0	1
2	1	0	0	0	1
2	0	1	0	0	2.1
2	0	0	1	0	2.2
2	0	0	0	1	3
1	2	0	0	0	2.1
1	1	1	0	0	2.1
1	1	0	1	0	2.2
1	1	0	0	1	3
1	0	2	0	0	2.2
1	0	1	1	0	2.2
1	0	1	0	1	3
1	0	0	2	0	3
1	0	0	1	1	3
1	0	0	0	2	Fail
0	3	0	0	0	2.1
0	2	1	0	0	2.1
0	2	0	1	0	2.2
0	2	0	0	1	3
0	1	2	0	0	2.2
0	1	1	1	0	2.2
0	1	1	0	1	3
0	1	0	2	0	3
0	1	0	1	1	3
0	1	0	0	2	Fail
0	0	3	0	0	2.2
0	0	2	1	0	2.2
0	0	2	0	1	3
0	0	1	2	0	3
0	0	1	1	1	3/F
0	0	1	0	2	Fail
0	0	0	3	0	3
0	0	0	2	1	3/F
0	0	0	1	2	Fail
0	0	0	0	3	Fail

3/F: Candidates with aggregate marks of ≥ 120 (40%) will be placed in the Third Class, those with less will be deemed to have failed.

APPENDIX 4:

NATURAL SCIENCES TRIPOS EXAMINATIONS DATA RETENTION POLICY

Part IB

The following data are retained by Colleges and the Educational and Student Policy section of the Academic Division of the University:

Routinely available data:		
Data	Retention period	Accessible through:
Final Mark Book	Indefinitely	College DoS or Tutor NST Committee Secretary

The marks contained in the final mark book include a mark for each subject taken and the overall class. Further information may be routinely released (as part of the markbook) and will include ALL information that the Examiners have determined as being meaningful or helpful as indicators of examination performance.

Other information that is not included in the mark book is considered to be relatively meaningless as an indication of examination performance, given the moderation processes that are used in determining a class by Examiners. Such information may be retained by the Examiners for a period of up to one month after the publication of the class list. Students may apply for this further information according to the relevant Departmental Examinations Data Retention Policy.

Where any automated compiling or processing of marks is used, the results are subsequently deliberated by the Board of Examiners responsible.

Please request data in writing from:

NST Committees Secretary	Chairman of Examiners (Part IB, II, III)
Jane Clare Educational & Student Policy Academic Division 17 Mill Lane Cambridge CB2 1RX	Dr Kate Plaisted-Grant Department of Psychology Downing Site Cambridge

APPENDIX 5:

NATURAL SCIENCES TRIPOS

ADVICE REGARDING WRITING ON SCRIPTS

The Committee of Management for the Natural Sciences Tripos has agreed to endorse the General Board's advice on the writing on examination scripts. The advice from the General Board's Education Committee is based on two principles: objectivity of marking (where double marking is used) and the administrative complications of retaining and disseminating comments on scripts to students if requested to do so.

Where this is not already current practice, Examiners are recommended to record their marks and comments separately from the examination scripts. Such marks and comments should be recorded clearly in a way that will aid reference to the original work.

In all cases, Examiners and Assessors should ensure that some indication (i.e. a tick or other identifier) is made on each page of the script to indicate that it has been read and reviewed.

The Committee of Management for the NST has agreed that there are cases where it is sensible and prudent for marks and comments to be made on the scripts; in these instances, Examiners should take due care that this data can be retrieved easily if a request is made.

Examiners are entitled to make comments on scripts, providing that they are aware that students may request a transcription of those comments. It is the responsibility of the Examiners, or the relevant Department, to ensure that there are resources and procedures in place to deal with any such requests as they arise.

NATURAL SCIENCES TRIPOS

USE OF EXTERNAL EXAMINERS IN PART IB OF THE TRIPOS

The Committee of Management for the Natural Sciences Tripos have agreed to the following advice for Senior Examiners regarding the use of External Examiners in subjects in Part IB of the Tripos.

The appointment of External Examiners for subjects within Part IB of the Tripos is a decision for the local Faculty Board or equivalent authority.

Senior Examiners are requested to remind their respective External Examiners that although we report classes in individual subjects, the principal purpose of these classes is to enable an overall Class List to be compiled from hundreds of distinct combinations of 19 separate subjects.

The marks are norm-referenced in part so that classing across the whole cohort of Part IB of the NST is considered fair, given that the different subjects making up the Tripos use different marking methods and often give different mark distributions (also observed nationally). Such moderation is also considered useful so that students can compare their performance across subjects and to promote fairness in the Part II subjects' allocations procedure.

The Senior Examiner should advise External Examiners that their primary role should be to focus on the general levels of attainment and the scope and appropriateness of the syllabus in the contexts outlined in the General Board guidance on the roles of External Examiners.

APPENDIX 6:

Scaling and marks for the final markbook

Where the mark distribution does not conform to the general target or the cohort target (see Appendix 2), the marks for that subject must be scaled to meet one of these targets before they are submitted to the Chairman. Senior examiners are asked to use the Excel worksheet provided in order to carry out scaling. Full instructions on how to use the scaling template will be provided when the worksheet is distributed.

The distributed workbooks **REQUIRE the use of Microsoft Excel 2010 or later**. Senior Examiners are asked to ensure, in advance, that they or whoever will be processing the marks for submission, have available to them a computer with suitable software. In this section, the marks prior to this piecewise linear scale shall be referred to as the raw marks. There are three steps involved in the scaling of the raw subject marks: (i) the target distribution to be used is determined (ii) the candidates are partitioned into sections determined by their ranking and the correct target distribution, and (iii) a piecewise linear scaling of the raw marks is applied. The raw mark must be out of 100.

Only candidates who have sat ALL parts of the examination in your subject should be included in this process. Candidates who have withdrawn from all or part of the examination should be **EXCLUDED**. (In the markbook, the letter “W” should be placed in the “Total” column to indicate any such absence).

Also candidates who will not appear on the NST Class list, e.g. other Tripos, NFH etc., should be **EXCLUDED** when determining scaling although their marks should be scaled and they will receive a subject rank and class.

The template worksheet instructions talks examiners through determining the target distributions and boundaries. Whether the distribution should be adjusted to meet the defaults targets or the cohort-specific targets (see Appendix 2) should be determined by which target **requires the least adjustment to the raw distribution**. The determination should be independent for each target.

APPENDIX 7:

USEFUL CONTACTS

Chairman of Examiners, Parts IB, II, & III

Dr Kate Plaisted-Grant
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Cambridge

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Secretary, Committee of Management for the NST

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Reprographics Centre

The Old Schools

Mr Nigel Reynolds

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tel: 48721

**APPENDIX 8: Material to be submitted for the final Senior Examiners' meeting
PLEASE FILL IN THIS SHEET AND BRING THIS TO**

The Secretary to the Committee of Management for the NST
Educational & Student Policy, Academic Division
17 Mill Lane
Cambridge CB2 1RX

ALONG WITH

- One copy of the marksheet, signed by all Examiners
- an electronic copy of the marksheet, in the correct format, on a USB stick

YOU DO NOT NEED TO PRODUCE ANY OTHER INFORMATION

SUBJECT:

	<i>marks (%)</i>	<i>number</i>	<i>percentage</i>
1st	69.95 or over		
II.1	59.95 or over		
II.2	49.95 or over		
III	39.95 or over		
ordinary / fail	Below 39.95		
TOTAL			

Withdrawn candidates should be excluded from the total

<i>Average Mark</i>	
<i>Standard Deviation</i>	
Number withdrawn	

Have you met the general targets for your cohort size? (see Appendix 2) For marks ≥ 59.95 For marks ≥ 69.95

If **NO**, have you met the 1A cohort performance targets? For marks ≥ 59.95 For marks ≥ 69.95

Have you performed scaling as set out in Appendix 6? If yes please state whether the general or the cohort targets have been scaled to

Have you any candidates “not for honours” (e.g. CMI exchange students) whose marks are NOT out of the usual total?