Examiners' Report: FHS Mathematics and Philosophy Part A; Trinity Term 2012

October 31, 2012

Part I

A Statistics

- **Numbers and percentages in each class.**

  See Table 1, page 1.

Table 1: Numbers in each class

Range	Numbers				Percentages %			
	2012	2011	2010	2009	2012	2011	2010	2009
70 –100	5	7	5	2	27.78	31.81	20.83	11.8
60–69	6	11	14	11	33.33	50	58.33	64.7
50–59	6	4	4	2	33.33	18.19	16.67	11.8
40–49	1	0	1	2	5.56	0	4.17	11.8
30–39	0	0	0	0	0	0	0	0
0–29	0	0	0	0	0	0	0	0
Total	18	22	24	17	(100)	(100)	(100)	(100)

- **Numbers of vivas and effects of vivas on classes of result.**
  Not applicable.
- **Marking of scripts.**
  The same system of checking was used as in all parts of FHS Mathematics. There are no Philosophy papers in FHS Part A in Mathematics & Philosophy.
- **Numbers taking each paper.**

The whole cohort of 18 candidates took all 4 papers. [Please note that one of the candidates was sitting Part A and Part B in the same session. For administrative reasons the Part A marks for this particular candidate were not entered into the database and so are not reflected in the Paper or Question Statistics in this report].

B. New examining methods and procedures

None

C. Changes in examining methods and procedures currently under discussion or contemplated for the future

A review of the structure in Part A is underway. This is likely to be implemented in 2012/13.

D. Notice of examination conventions for candidates

The first Notice to Candidates was issued on 20th February 2012 and the second notice on the 30th April 2012.

These can be found at http://www.maths.ox.ac.uk/content-7, and contain details of the examinations and assessments. The course Handbook contains the full examination conventions and all candidates are issued with this at Induction in their first year. All notices and examination conventions are on-line at http://www.maths.ox.ac.uk/notices/undergrad.

1 Part II

A. General Comments on the Examination

The examiners would like to express their gratitude to

- Sandy Patel and Vicky Archibald for overseeing Part A examinations during 2011/12.
- Also Waldemar Schlackow for continuing to develop the examinations database, responding to examiner requests and providing such a good framework for the examinations data.
- We would also like to thank Helen Lowe, Charlotte Turner-Smith and Nia Roderick for all their sterling work in keeping track of the scripts and marks and everything else they do during the busy examination period.
- We also thank those assessors who set their questions promptly, took care in checking and marking them, and met their deadlines. This is invaluable help for the work of the examiners.
- All the assessors and the internal examiners would like to thank the external examiner Professor Elizabeth Winstanley for her careful reading of the draft papers, scrutiny of the examination scripts and insightful comments throughout the year.

Timetable

The examinations began on Monday 18th June at 9.30am and ended on Thursday 21st June at 12.30pm.

Medical certificates and other special circumstances

See Section E.

Determination of University Standardised Marks

The examiners followed the standard procedure for converting raw marks to University Standardized Marks (USM), as applied for candidates in mathematics. The examiners chose the values of the parameters as listed in Table 5 guided by the advice from the Teaching Committee and by examining individuals on each paper around the borderlines. In comparison to the parameter values chosen for mathematics candidates, some adjustment has been taken for the Maths & Phil exam: in the present exam, the question averages for differential equations on AC1 and AC2 are typically higher than those for algebra and analysis. In order not to disadvantage candidates in Maths & Phil, the weighted averages of AC1 and AC2 respectively on the algebra and analysis questions and on all exam questions have been calculated. The

difference between these averages has been used to adjust the parameter values from AC1 and AC2 respectively to obtain those for AC1(P) and AC2(P).

Table 2: Parameter Values

Paper	C1	C2	C3
AC1(P)	46	30	17
AC2(P)	56	40	18
AO1(P)	34	20	11
AO2(P)	43	29	13

B. Equal opportunities issues and breakdown of the results by gender

Table 3, page 4 shows the performances of candidates broken down by gender.

C. Detailed numbers on candidates' performance in each part of the exam

Tables 4 to 8 on pages 5 to 6 give the statistics for each paper of the examination.

D. Comments on papers and individual questions

Below are comments on the questions that were specific to Mathematics and Philosophy. Comments on other questions are made in the report on the Mathematics Part A examination.

Table 3: Breakdown of results by gender

Range	Total		Male		Female	
	Number	%	Number	%	Number	%
70 –100	5	27.78	5	38.46	0	0
60–69	6	33.33	4	30.7	2	40
50–59	6	33.33	3	23.08	3	60
40–49	1	5.56	1	7.69	0	0
30–39	0	0	0	0	0	0
0–29	0	0	0	0	0	0
Total	18	100	13	100	5	100

Table 4: Overall statistics for each paper

Paper	average Raw	sdRaw	average USM	sdUSM
AC1(P)	37.59	5.46	63.94	5.47
AC2(P)	41.71	10.35	58.94	9.79
AO1(P)	27.18	6.29	66.18	11.1
AO2(P)	40.12	6.66	73.47	12.95

Table 5: Question Statistics for AC1(P)

Subject	Question	rawAve	rawSD	Attempts	Unused
Algebra	1	7.71	1.57	17	0
	2	7.53	1.84	17	0
	3	4.88	2.12	17	0
Analysis	4	4.29	1.36	17	0
	5	6.76	1.35	17	0
	6	6.41	2.21	17	0

Table 6: Question Statistics for AC2(P)

Subject	Question	rawAve	rawSD	Attempts	Unused
Algebra	1	12.7	5.64	10	0
	2	15	6.56	11	1
	3	19.3	3.13	10	0
Analysis	4	4.5	3.53	1	1
	5	11.56	2.55	16	0
	6	6.4	1.82	3	2

Table 7: Question Statistics for AO1(P)

Subject	Question Number	rawAve	raw SD	Used Attempts	Unused
Introduction to Fields	A1	7.78	2.77	8	1
Group Theory	B1	7.29	3.09	7	0
Number Theory	C1	8.64	1.21	14	0
Integration	D1	5.5	1.91	4	0
	D2	2	1.73	3	0
Topology	E1	5.5	2.24	13	1
	E2	6.36	1.39	12	2
Quantum Theory	J1	9		1	0
Mods Probability	N1	5.33	2.58	6	0

Table 8: Question Statistics for AO2(P)

Subject	Question	rawAve	rawSD	Used Attempts	Unused
Group Theory	B2	23.25	2.87	4	0
Number Theory	C2	21.8	4.26	14	1
Integration	D4	14		1	0
Topology	E3	18.4	5.78	10	0
	E4	14		1	0
Quantum Theory	J2	23		1	0
Mods Probability	N2	17	4.36	3	0

Question N1: There were 7 attempts: 3 poor, 2 middling and 2 good (one of which was perhaps unfortunate to lose a couple of marks on a silly error). It was surprising how many students didn't check that their answer to (b) really was a probability mass function. (d) is a standard piece of bookwork which seems to have been generally poorly understood/memorised.

Question N2: There were 4 attempts: 1 poor, 2 middling and 1 good. It is difficult to draw conclusions from 4 attempts, but this was probably quite a hard question. As a consequence, marking of the more basic parts has been relatively generous. As was perhaps predictable, only the best candidate was able to do (a)(ii). The instruction to "argue carefully" in (b)(ii) was, for the most part, ignored. It was surprising how difficult the students found it to solve the equation in (b)(v), which doesn't require any complicated method.

F. Names of members of the Board of Examiners

Prof. A. Henke (Chairman), Prof. F. Kirwan, Prof. K.P Tod, Dr. D. Steinsaltz, Dr. Y. Capdeboscq, Prof. E. Winstanley (external examiner).

Assessors for Paper AO1(P) and AO2(P): Dr K. Kremnitzer, Prof. U. Tillmann, Prof.

C. Batty, Prof. M. Lackenby, Dr J. Sparks, Dr. C. Goldschmidt.