

**FSMQ**

**Foundations of Advanced Mathematics (MEI)**

Unit **6989**: Multiple Choice

Free Standing Mathematics Qualification

**OCR Report to Centres January 2014**

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This report on the examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the examination.

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## Foundations of Advanced Mathematics – 6989

There were just fewer than 500 entries for this series. The mean mark was 28. The minimum mark scored by two candidates was 7 and three candidates scored the maximum mark of 40. In 22 questions at least one candidate offered no answer and in some cases there were quite a number of such omissions – the maximum number was 6 for question 34. These were scattered throughout the paper (and did not include questions 39 and 40) so this did not provide any evidence that candidates found the paper too long.

In all questions each of the distracting responses was selected by at least one candidate.

In 5 questions the correct response was chosen by fewer than 50% of candidates, all in the second half of the paper. In 4 of those questions the candidates giving the wrong response were spread over the other three responses.

In question 29 a higher percentage of candidates chose the wrong response than those who chose the correct response.

Q 29 Algebra – quadratic equation

In response A, candidates were asked to find the roots of a quadratic equation in which the coefficient of  $x^2$  was not 1. The values given were correct but most candidates did not think so. The correct response was B which was chosen by only slightly fewer candidates. Here the factorisation of the quadratic gave  $(x - 5)(3x + 8) = 0$  from which the roots were given as

$$x = 5 \text{ and } x = -\frac{3}{8}.$$

As in previous sessions I offer a summary of questions and topics with the approximate percentage of candidates giving the correct responses.

| Percentage obtaining the correct response | Question | Topic  |
|---|----------|--|
| 91 – 100                                  | 7        | Arithmetic – fractions                           |
|   | 11       | Arithmetic – calculations                        |
|   | 26       | Algebra – simultaneous equations                 |
| 81 – 90                                   | 1        | Arithmetic – operations                          |
|   | 4        | Algebra – substitution of numbers in expressions |
|   | 5        | Statistics – measurement of average and spread   |
|   | 6        | Geometry – area of rectangles and similar shapes |
|   | 9        | Arithmetic – ratios                              |
|   | 13       | Statistics – tally chart and mean value          |
|   | 15       | Algebra – sequences                              |
|   | 17       | Graphs – conversion graph                        |
|   | 18       | Arithmetic – definitions and percentages         |
|   | 23       | Arithmetic – standard form                       |
|   | 27       | Arithmetic – error bounds                        |
|   | 28       | Statistics – cumulative frequency                |

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|         |    |   |
|---------|----|---|
| 71 – 80 | 2  | Arithmetic – definitions                                |
|         | 8  | Geometry – Pythagoras, ratio and area of triangle       |
|         | 19 | Arithmetic – mensuration                                |
|         | 25 | Statistics – interpretation of bar chart                |
|         | 36 | Algebra – sequences                                     |
|         | 39 | Graphs – identification of quadratic curves             |
| 61 – 70 | 10 | Algebra – rearrangement of formulae                     |
|         | 12 | Algebra – quadratic equations                           |
|         | 16 | Arithmetic – sensible units                             |
|         | 20 | Geometry – equation of a straight line                  |
|         | 21 | Probability   |
|         | 24 | Statistics – pie chart and percentages                  |
|         | 30 | Vectors   |
|         | 31 | Arithmetic – areas and volumes                          |
|         | 32 | Probability   |
|         | 35 | Algebra – addition of fractions                         |
| 51 – 60 | 3  | Algebra – solution of linear equations and inequalities |
|         | 14 | Geometry – scale drawing                                |
|         | 22 | Algebra – expansion of brackets and roots of quadratic  |
|         | 40 | Algebra – rates of change                               |
| 41 – 50 | 34 | Trigonometry  |
|         | 37 | Graphs – cubic curve                                    |
|         | 38 | Trigonometry – graphs of trigonometrical functions      |
| 31 – 40 | 29 | Algebra – quadratic curve                               |
|         | 33 | Trigonometry and speed                                  |

**Mark Scheme**

| Question | Response | Question | Response |
|----------|----------|----------|----------|
| 1        | A        | 21       | B        |
| 2        | D        | 22       | C        |
| 3        | C        | 23       | A        |
| 4        | D        | 24       | C        |
| 5        | C        | 25       | B        |
| 6        | C        | 26       | C        |
| 7        | D        | 27       | A        |
| 8        | D        | 28       | B        |
| 9        | B        | 29       | B        |
| 10       | A        | 30       | C        |
| 11       | D        | 31       | D        |
| 12       | B        | 32       | B        |
| 13       | D        | 33       | D        |
| 14       | B        | 34       | B        |
| 15       | A        | 35       | D        |
| 16       | D        | 36       | B        |
| 17       | C        | 37       | D        |
| 18       | A        | 38       | A        |
| 19       | B        | 39       | A        |
| 20       | C        | 40       | C        |

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