OCR
RECOGNISING ACHIEVEMENT

FSMQ

Foundations of Advanced Mathematics (MEI)

INTERMEDIATE FSMQ **6989**

Combined Mark Scheme And Report on the Unit

June 2007

6989/MS/R/07

Oxford Cambridge and RSA Examinations

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All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

The reports on the Examinations provide 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 syllabus content, of the operation of the scheme of assessment and of the application of assessment criteria.

Mark schemes and Reports should be read in conjunction with the published question papers.

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Foundations of Advanced Mathematics FSMQ (6989)

MARK SCHEME AND REPORT ON THE UNIT

Mark Scheme and Report on the Unit
June 2007

Foundations of Advanced Mathematics – 6989

Report and Mark Scheme, June, 2007

There were 933 entries for this session, easily the largest number in a session, which is most encouraging. The mean mark was 21.5, slightly up on last year. The minimum mark scored by three candidates was 6; no candidate scored full marks, though 2 scored 39.
These statistics are in spite of the fact that there were rather more questions than usual that caught out candidates, and there were 7 questions in which the wrong answer was selected by more candidates than the right answer.

In many papers the correct answer has been given by between 80% and 90% of the candidature on a number of questions; on this paper this happened only twice (Q2 operations and Q32, Substitution). A number of other questions attracted over 70% of correct responses.

The greatest problem was caused by Q21 (proportions). Here the mass of a length of rope is proportional to its volume so if the radius is doubled the mass is multiplied by 4; 81% simply took the answer that was the ratio of radii.

Q26 (Vector diagram) was also unusual in that the correct answer was the least popular answer. Here, candidates tend to take the mirror image of the diagram given in order to get the plane to fly due east, instead of taking a triangle in which the speed of the plane is the hypotenuse.

In Q6 (approximate values in formula and rearrangement) nearly 50% of candidates thought that the correct rearrangement of the formula was incorrect while an incorrect approximation was thought to be correct by 38%.

In Q15 (setting up equations involving speed and distance) the correct response giving the speed of a cycle ride as distance over time multiplied by 60 to convert the units was thought to be incorrect by 37% while only 29% took the same idea for the run but divided by 60 to convert the units as the correct response.

In Q20 (displacement/time graph) candidates clearly confused the graph with that of a speed/time graph, and so saw the response “the particle is stationary” at the point where the curve crossed the x-axis as a correct answer while the response to do with the gradient of the tangent was seen as incorrect.

In Q37 (Algebraic simplification) response A was the most popular choice of the correct answer. It is likely that by this time candidates are beginning to run out of time and made a predictable error without checking the other responses.

Likewise, in Q40 (Sine and cosine rules), response A was the most straightforward of applications to give a correct value for the third side of the triangle, but was chosen as incorrect. It may be that lack of time meant not considering the question carefully and trying to apply Pythagoras in some way which would obviously yield this answer as incorrect.

As in previous sessions I offer a summary of questions and topics with the approximate percentage of candidates giving the correct responses. As noted in previous reports, the giving of the correct response may not be because the candidate understands the question and can discern the errors being made in the distracting responses. Attempts are made not to offer distractors in such a way that the correct response is clearly different to the rest, but our perception of typical errors might result in that happening.

Question	Topic
81 – 90%	2 Operations
32	Substitution
71 – 80%	3 Algebra - substitution
11	Interpreting pictogram
18	Sampling, average and range
19	Simultaneous equations
28	Conversion graph
61-70%	5 Standard form
8	Equations
9	Interpreting a compound bar chart
13	Indices
25	Graphs of linear functions
30	Quadratic functions
31	Setting up an equation
51 –60%	4 Algebraic simplification
7	Percentages
10	Conversion of units
14	Estimation
17	Arithmetic
23	Percentage increase
24	Cumulative frequency
29	Inequalities
33	Area under curve
34	Interpreting equation
35	3-D geometry
39	Quadratic sequence
41 – 50%	1 Number
12	Probability
22	Pie chart
27	Vectors
36	Trigonometry
31 – 40%	6 Approximations and rearrangements
38	Graphs of trigonometrical functions
40	Sine and cosine rules
21 – 30%	15 Setting up equations
16	3-D geometry
20	Displacement-time graph
37	Algebraic simplification
11 – 20%26	Vector diagram
0˜ 10%	21 Proportions

Answers.

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

FSMQ Intermediate Foundations of Advanced Mathematics (FAM)
June 2007 Assessment Session

Unit Threshold Marks

Unit	Maximum Mark	A	B	C	D	E	U
6989	40	31	27	23	19	15	0

The cumulative percentage of candidates awarded each grade was as follows:

	A	B	C	D	E	U	Total Number of Candidates
6989	8.5	22.6	44.1	66.6	85.3	100	933

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