OCR
RECOGNISING ACHIEVEMENT

FSMQ

Foundations of Advanced Mathematics (MEI)

INTERMEDIATE FSMQ **6989**

Report on the Unit

January 2008

6989/MS/R/08

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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.

Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

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MARKSCHEME AND REPORT ON THE UNIT

Foundations of Advanced Mathematics – 6989

Report and Markscheme

There were 779 entries for this session, in line with previous years. The mean mark was just under 23.5. The minimum mark scored by three candidates was 6 and on this occasion 2 candidates scored full marks.
There were 9 questions for which at least one candidate offered no answer but these were scattered throughout the paper so this did not provide any evidence that candidates found the paper too long or too hard.

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

In 6 questions the wrong response was selected by more candidates than the right response, and in a few others fewer than 50% chose the correct response.

Q6 (Standard form)
There were two numbers given in a form that could be taken to be standard form and the candidates were asked to decide which were incorrect. They were, in fact, both incorrect. The distractors were chosen in roughly equal numbers the most popular being that 93 000 000 = 93 $\times 10^6$ was correct.

Q21 (Trigonometry)
The most popular incorrect response here involved the area of a triangle which was not right-angled and with the height outside the triangle.

Q25 (Vectors)
The response that was chosen most frequently involved the angle between a vector and the *x* axis which was obtuse. The correct response was A where only 14% decided that $\mathbf{a} = 5\mathbf{i} - 4\mathbf{j}$ was not a unit vector.

Q30 (Sine and cosine rules)
This topic results in a long question, though on this occasion the requirement was to work out only one length by the cosine rule and one by the sine rule. Nonetheless, many candidates might have guessed the answer. Marginally more decided that the side calculated by the cosine rule (including an obtuse angle) was incorrect when in fact it was correct.

Q35 (3 - D trigonometry)
Marginally more decided that the response B was the correct response, as being the false statement, while it was in fact the last response (the angle of an edge with the base) that was incorrect.

Q36 (Rearranging formulae)
This standard question offered 4 rearrangements, one of which is incorrect. It has resulted in fewer candidates choosing the correct response than an incorrect response in previous years as well as this year - roughly equal numbers chose the three incorrect responses.

As in previous sessions I offer a summary of questions and topics with the approximate percentage of candidates giving the correct responses. It is notable that the questions on trigonometry have not been answered well.

	Question	**Topic**
91 – 100%	1	Arithmetic
	12	Appropriate units
81 – 90%	3	Truncation of decimals
	5	Grouping data
	14	Arithmetic (ratios and percentages)
	15	Algebra (solution of a linear equation)
	28	Statistics (proportions and pie charts)
71 - 80%	2	Conversion of units
	7	Arithmetic (fractions)
	11	Arithmetic (percentage increase and decrease)
	13	Probability
	19	Algebra (factorisation and expansion of brackets)
61 - 70%	9	Algebra (substitution of values into expressions)
	16	Arithmetic (approximations)
	18	Vectors
	27	Algebra (linear inequality)
	29	Algebra (factorisation of quadratics)
	33	Algebra (use of formula)
	34	Algebra (graphical solution of simultaneous equations)
	39	Arithmetic (sequences)
51 - 60%	4	Algebra (powers and coefficients of terms)
	17	Graphs
	38	Trigonometry (graphs of trigonometrical functions)
	40	Algebra (speed - time graph)
41 - 50%	8	Linear graphs
	22	Arithmetic (circles)
	23	Algebra (solution of quadratic equations)
	24	Algebra (solution of linear simultaneous equations)
	26	Algebra (sides and area of triangles)
	31	Probability
	32	Mensuration (approximation of area and scales)
	37	Algebra (simplification of algebraic fractions)
31 - 40%	10	Statistics (average and range)
	20	Gradient of curve (including the plotting of a curve)
	30	Trigonometry (sine and cosine rules)
21 - 30%	21	Trigonometry (ratios in a triangle)
	35	3-D trigonometry
	36	Algebra (rearrangement of formulae)
11 - 20%	6	Arithmetic (standard form)
	25	Vectors

Answers

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

Grade Thresholds

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	18.6	34.2	53.7	75.5	88.2	100	779

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