FSMQ

Foundations of Advanced Mathematics (MEI)

Mark Scheme and Report on the Unit

June 2008

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Foundations of Advanced Mathematics FSMQ (6989)

MARK SCHEME AND REPORT ON THE UNIT

6989 Foundations of Advanced Mathematics FSMQ

There were 1300 entries for this session, a significant increase from previous years. The mean mark was 22.3. The minimum mark scored by 3 candidates was 6 and the maximum mark was 39, scored by 6 candidates.
There were 16 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.

Unusually, in Q3 (Electrician's charges) no candidate offered response A as an answer. In all other questions each of the distracting answers was selected by at least one candidate.

In 5 questions the wrong response was selected by more candidates than the right response, and in 11 others fewer than 50% chose the correct response.

Q22 (Indices) Only 39% of the candidature thought that $2^3 \times 3^2 = 6^5$ was false, while 43% clearly found $\dfrac{2^5 \times 3^4}{6^2 \times 9}$ hard to calculate and decided that it was not 2^3.

Q27 (maximum and minimum values) Only 23% gave the correct response here, with 25% and 32% giving incorrect values. The idea of the least value of a fraction requiring the least numerator and greatest denominator is a concept that many have not grasped.

Q29 (Distance - time graph) This question required candidates to draw the line representing a journey on top of one already drawn to see where they intersected. The question stated explicitly that Bob left Queentown for Portville before Andy, riding from Portville to Queentown, had arrived, yet 43% of candidates thought that they did not pass each other. Although we do not have their graphs (which were drawn on the question paper which is not handed in) one must presume that the majority of these misread the question and thought that the two were travelling in the same direction.

Q34 (Solution sets to inequalities) Equal numbers chose the right answer and one of the wrong ones, but even more (37%) chose the response $2 < n + 6 < 10 \Rightarrow -4 < n < 4$ as false.

Q40 (Probability) The non-replacement probability was chosen to be false by marginally more candidates than those choosing the correct response.

As in previous sessions I offer a summary of questions and topics with the approximate percentage of candidates giving the correct responses. I noted in my January report that the questions on trigonometry had not been answered well. The situation is no better this session!

	Question	**Topic**
91 – 100%	10	Statistics - pie chart
81 – 90%	1	Arithmetic
	5	Algebra
	12	Arithmetic - order of operations
71 - 80%	2	Arithmetic - decimal places and significant figures
	3	Arithmetic - electrician's charges
	6	Arithmetic
	8	Algebra - linear sequence
	13	Graphs - conversion graph
	25	Algebra - substitution of numbers into expressions
61 - 70%	4	Arithmetic - standard form
	11	Statistics - interpretation of bar chart
	19	Vectors
	20	Statistics - formation of frequency table
	30	Graphs - intersection of two lines, one of which had to be drawn
	37	Algebra - solution of equations
51 - 60%	14	Statistics - average and spread of grouped data
	16	Algebra - identities
	21	Algebra - indices
	26	Arithmetic - mensuration
	31	Algebra - solution of quadratic equations
	33	Algebra - solution of linear simultaneous equations
	36	Arithmetic - ratios
	38	Statistics - sampling
41 - 50%	7	Arithmetic - rounding of numbers
	9	Arithmetic - conversion of units
	17	Arithmetic - Pythagoras in a circle
	18	Algebra - rearranging formulae
	24	Graphs - completion of a cubic curve
	29	Graphs - distance-time graph
	32	Algebra
31 - 40%	15	Trigonometry - sine and cosine rules
	22	Arithmetic - indices
	23	Algebra - simplification of an expression
	35	Trigonometry - Pythagoras in 3-D diagram
	39	Vectors
	40	Probability
21 - 30%	27	Arithmetic - maximum and minimum values
	28	Trigonometry - trig ratios of angles greater than 90^0
	34	Algebra - solutions of inequalities

Answers

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

Grade Thresholds

Unit Threshold Marks
June 2008

Unit	Maximum Mark	A	B	C	D	E	U
6989	40	32	28	24	20	16	0

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

	A	B	C	D	E	U	Total Number of Candidates
6989	8.8	21.1	42.1	65.1	85.5	100	1273

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

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Telephone: 01223 553998
Facsimile: 01223 552627
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