OCR
RECOGNISING ACHIEVEMENT

FSMQ

Foundations of Advanced Mathematics (MEI)

INTERMEDIATE FSMQ **6989**

Report on the Unit

January 2009

6989/MS/R/09J

Oxford Cambridge and RSA Examinations

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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 syllabus 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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There were 700 entries for this session, in line with previous years. The mean mark was just 24. Apart from one candidate who scored 0, the lowest mark was 9. One candidate achieved full marks and a further 6 candidates obtained 39 marks.

Unusually there was one question (Q5) where not one candidate chose the response B. In all other questions each of the distracting answers was selected by at least one candidate.

In 13 questions the correct response was chosen by a minority of candidates and in 4 further questions an incorrect response was chosen by a majority of candidates.

Q 25 (Probability)
The probability that two dice thrown independently have the same score is the same as the probability that one die thrown has a particular score (1/6). This was seen as incorrect and so the majority of candidates opted for response D. This suggested that the blue die would show a score greater than the red die in approximately half of a large number of throws, ignoring the fact that they might be the same.

Q 27 (Vectors)
Rather more candidates opted for the response which stated that the angle between vector **b** and the **i** direction was acute, despite the fact that $\mathbf{b} = -\mathbf{i} + 8\mathbf{j}$. A majority decided that the three vectors did not have the same magnitude. However, since $7^2 + 4^2 = 1^2 + 8^2$, this response was correct.

Q 31 (3D Pythagoras)
Only 17% decided that the statements were all correct, giving the correct response as D. The first three steps involved the use of Pythagoras and 34% thought that one or more of these were incorrect. A further 34% decided that the application of the cosine rule to obtain the required angle was incorrect. Maybe the thinking was that “there is always something wrong somewhere”!

Q37 (Arithmetic – creating an expression from words)
The issue here was whether to multiply or divide by 100 to turn a sum of money expressed in pence into pounds.

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

	Question	Topic
91 – 100%	5	Arithmetic – conversion graph
	8	Algebra – substitution of numbers into algebraic expressions
81 – 90%	3	Arithmetic – operations
	6	Arithmetic – estimations
	7	Statistics – construction of tally table and charts
	9	Arithmetic – ratios
	10	Statistics – averages
	11	Algebra – equality of expressions
	17	Arithmetic – standard form
71 - 80%	16	Arithmetic – fractions
	24	Algebra – construction of formulae
	26	Algebra – factorisation and expansions
	39	Algebra – quadratic sequence

61 - 70%	13	Graphs – extracting information from graphs
	23	Vectors – summation
	28	Algebra – solution of simultaneous equations
	36	Algebra – identities
51 - 60%	2	Arithmetic – rounding numbers
	12	Algebra – solutions of equations
	20	Algebra – solutions of linear inequalities
	22	Trigonometry – ratios
	33	Statistics – cumulative frequency
	34	Graphs – extraction of information
41 - 50%	1	Arithmetic – factors, etc
	14	Arithmetic – upper and lower bounds
	15	Graphs – gradients
	18	Algebra – factorisation of quadratic expressions
	19	Trigonometry – ratios and sine rule
	21	Algebra – solution of quadratic equations
	30	Algebra – rearrangement of formulae
	35	Arithmetic – scale factors
	37	Algebra – construction of formulae
	40	Arithmetic – mensuration
31 - 40%	4	Arithmetic – imperial and metric units
	25	Probability – independent events
	27	Vectors – direction
	29	Probability – dependent events
	32	Arithmetic – mensuration
	38	Graphs – construct and interpret quadratic curve
21 - 30%		
11 - 20%	31	Trigonometry – 3D Pythagoras and cosine rule

Grade Thresholds

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Unit Threshold Marks

Unit	Maximum Mark	A	B	C	D	E	U
6989	40	31	27	23	19	16	0

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

	A	B	C	D	E	U	Total Number of Candidates
6989	17.1	35.6	54.7	80.2	91.7	100	702

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