Version

Free-Standing Mathematics Qualification
June 2012

Mathematics Advanced Level 6994

(Specification 6994)

Using and Applying Decision Mathematics

Report on the Examination

FSMQ Advanced level – Written paper

General

There was another significant decrease in the candidature for this paper. Candidates were well prepared for this examination. Generally the paper seemed fair and overall discriminated well.

Question 1

Candidates were extremely successful in this question. Parts (a) and (b) were generally correct but numerical accuracy in part (c) was a problem for a minority. Virtually all candidates used activities on nodes and they seemed thoroughly at home with the work. This was not true of those using activities on arc.

Centres are strongly advised to use 'activity on node' when teaching this topic.

Most stated the correct critical activities in (d) but part (e) proved to be much more difficult for candidates. All candidates scored on part (f). Some candidates lost marks by not illustrating the floats in their diagram.

Question 2

This question proved to be the most demanding on the paper, but the majority of candidates appeared to know the basic concepts of the work. Parts (b)(i) and (b)(iii) were well answered. However, candidates failed to appreciate the difference between a classical tour and a practical tour and consequently part (b)(ii) was poorly answered. Candidates started part (c)(i) successfully but the work often seemed to be first completed on the matrix and only then was there an attempt to write out the edges. Candidates should be encouraged to write the edges in as the work progresses. Candidates with answers to both parts (b) and (c) usually scored well on the last part.

Question 3

This question proved to be a good source of marks for all candidates. Dijkstra is now much better understood than in previous years. Some candidates lost the mark for the route by omitting either R or S.

Question 4

Candidates achieved more success with this topic than on previous papers.

Only a few used the wrong method in part (a). Of those using the correct algorithm, the method was almost always clear and marred only by numerical errors. Parts (b) and (c) proved to be more challenging. In part (b), candidates should be encouraged to draw their 'extra' edges on the diagram. The number of times each vertex will be visited then becomes clear. To answer part (c), candidates needed to realise that the only had to repeat one odd pair, and that pair had to have the smallest total.

FSMQ Advanced level – Portfolios

The standard of portfolios submitted for this award was generally very credit worthy with most centres following the Specification carefully. Working with Algebraic and Graphical Techniques was the most popular unit followed by Using and Applying Statistics and Using and Applying Decision Mathematics.

Generally centres encouraged their candidates to produce portfolios which showed independent work and realised for a high mark in Strand One initiative must be demonstrated in the development of the investigation. Some centres, however, did not appreciate that if a portfolio is incomplete scaling of marks must take place as indicated in the Specification.

It was pleasing to see that most centres encouraged their candidates to validate their work by carrying out a thorough range of 'checks'. However, the candidates from some centres did not produce work of the correct standard, this was particularly apparent in the Statistics unit where often only core material was developed. Some candidates did not produce "A report of fitting a function to non-linear data by plotting a linear function" for the Algebra unit and so could only be awarded a maximum mark of 24.

There were some very exciting portfolios which were rightly awarded a high mark, the assignments had been developed independently and the conclusions had included an explanation of how the initial data affected the findings. It should be remembered, however, that for a high mark in the Statistics unit, work on tests of significance, Mann Whitney test, Wilcoxon signed rank or similar topics must be seen. Similarly, in the Calculus unit integration/differentiation of more advanced functions must be attempted if a high mark is to be awarded.

The provision of samples was very efficient and most centres provided detailed comments on the Candidate Record Forms which greatly assisted the moderation process.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) pages of the AQA Website.

UMS conversion calculator [www.aqa.org.uk/umsconversion.](http://www.aqa.org.uk/umsconversion)