



**General Certificate of Education (A-level)  
January 2012**

**Mathematics**

**MD01**

**(Specification 6360)**

**Decision 1**

***Report on the Examination***

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## **General**

Most students were, once more, reasonably prepared for the exam. Again there were great numbers of well-drilled candidates quite capable of rehearsing familiar tasks. Candidates seemed to cope a little better with anything slightly out of the ordinary or requiring thought. However the ability to use the English language clearly and precisely, without ambiguity, was often lacking.

The general standard of presentation was good. Some scripts were very well presented and the vast majority were adequate in this respect, with very few scripts unacceptably untidily written and presented. There was no evidence of a time problem with this paper.

Most students scored very well on the first four questions but few managed to earn all 25 marks. The last four questions were quite different – very few candidates could cope with all four well. There were very few who could not cope at all as they all found places to earn worthwhile marks.

### **Question 1:**

Very few candidates used the wrong sort. The majority earned full marks. The most common error was to incorrectly re-combine the sub-sets after sorting. A few candidates used sets of 4 first and then sets of 2. It was noticeable that whereas many candidates managed to show clearly all that was required within about half a page, many others took almost two pages to achieve the same.

### **Question 2:**

Almost all candidates scored full marks on part (a) – the common error was to omit the link from D to 6.

The majority of candidates did not score full marks for part (b). Most scored 2 marks by either noting that a problem arose from tasks 4 and 5 both being able to be tackled only by D or by noting that, as F must be linked with task 6, E must be linked with task 5 and continuing from there. The problem was the third mark. Very few managed to mount a complete argument without either ambiguity or making it clear that they understood the requirements of a complete matching.

### **Question 3:**

The question was almost always very well answered. Only a small minority failed to make the order of selection of edges in part (a) clear or label their diagrams in part (b).

### **Question 4:**

This question wasn't answered very well, although zero scores were very rare. Candidates knew the required method but less than half were able to calculate the required lengths correctly in part (a).

Part (b) was no better, 2 being the popular answer.

### **Question 5:**

Part (a) was well-answered. Almost all candidates had the five correct lines. A minority failed to draw each of them to an acceptable accuracy and another small group did not label the feasible region.

Part (b) was not answered quite as well, with written and drawn evidence of at least one objective line. A few failed to realise that the values of  $x$  and  $y$  should be integral.

### **Question 6:**

Parts (a) and (b) were well-answered by most. The algorithm was clearly well known and presentation was usually neat and clear.

The numerical part of part (c) was usually correct, if often not well explained. Many candidates failed to “State the new route”. For the future they would be well advised to check that they have answered all parts of a question before proceeding to the next.

### **Question 7:**

There were very few errors in part (a) which was set in order to give candidates the opportunity to ‘see’ the context of the question.

In part (b)(i) the candidates who elected to write their tour down, vertex by vertex, underneath the table usually earned full marks. Those who elected to work entirely in the table often failed to make clear the order in which vertices had been selected and thus that they had actually used the nearest neighbour algorithm.

Despite answering part (b)(i) correctly and the hint in part (a), a surprising number of candidates merely repeated their tour from part (b)(i) for part (b)(ii).

Part (b)(iii) was usually correct.

Part (c)(i) was poorly answered. Many candidates simply did not present their working “on Table 2” and of those that did, few showed the order of selection of edges.

Part (c)(ii) caused even more problems. Many thought the required lower bound for the length of the tour would be the same as the length of the spanning tree just found. A larger number appeared to misread the requirement completely and now deleted a vertex from Table 2, going on to find a lower bound for a tour of the vertices in Table 2.

The last two parts of the question, part (c)(iii) and part (d), were quite well answered by the majority of candidates.

### **Question 8:**

Many candidates failed to score full marks in part (a) as they failed to give a complete and compelling answer.

Part (b) was usually well answered.

Part (c) served merely to underline the weakness of many candidates when it came to expressing clearly and fully a rational argument.

## **Mark Ranges and Award of Grades**

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