

GCE MATHEMATICS

MD01 Decision 1
Report on the Examination

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General

Most students were clearly well-prepared for the demands of this paper. The general standard of presentation was good and some scripts were extremely well presented. However, there were a minority of students who felt that a low standard of presentation would be acceptable. Some scripts had almost illegible writing, scruffy presentation and generally illiterate comments. In a subject like Decision Mathematics, a lack of precision and clarity leads to many students unnecessarily losing a number of marks.

Question 1

(a) Apart from the very rare slip or even rarer completely wrong format solutions were almost always correct. Part (b) was also usually answered correctly. Marks were lost either by not using an algorithm and merely writing a correct answer down, by not writing their chosen answer as a statement but leaving it solely in diagrammatic style or by using such an idiosyncratic method of writing their paths that credit could not justifiably be awarded. A significant number of students still do not list their final matching.

Question 2

The sorting method was well known and very few students offered an incorrect method. The majority of students used the first value in a list as the pivot. Those students who used middle values as pivots were seldom consistent. Students are strongly recommended to use the first number in any list as the pivot when using Quicksort. If the correct sort was used, the second part of the question was almost always correct.

Question 3

Generally this was a very high scoring question with many students scoring full marks. The three parts of part (a) were usually shown clearly and calculated accurately. Many students are clearly taught to write down all the sides in order of ascending length and then to tick or cross them according as to whether they are to be included, without writing the resulting spanning tree out separately. Very few students forgot to label their diagram. In the second part, a few students confused the request for edges with one for vertices.

Question 4

A significant number of students failed to read the instructions on the title page and within every designated answer space, and used the diagram given in the text of the question.

(a) This part was almost invariably answered correctly.

(b) This was the first question to cause significant difficulty. The most common misconception was to believe that the answer in the question could certainly be improved. Many students failed to state the obvious but necessary fact that the answer was in fact the time for a tour.

(c) This part was usually answered correctly. However, a common error was to fail to complete the tour by returning to *A*. Those who used a redrawn table often failed to make clear the order in which edges were to be chosen.

(d) The method is known and understood by most students. However, there is a widespread tendency to deal merely in numbers and to not clearly identify the edges being used. This results in the loss of a significant number of marks. Many students thought they needed a tour of *BCDEF*.

(e) The reason was apparently widely known but the ability to express it clearly in comprehensible words was often lacking.

Question 5

Part (a)(i) was very well answered. Dijkstra's algorithm was well known and the presentation was invariably clear and acceptable. Errors were almost always just simple slips, the most common being the presence of a crossed out 11 at I . In (a)(ii) many students gave the routes in reverse. In part (b) the method required for (i) was widely known, clearly explained and accurately calculated. The most common errors were to identify three or five odd order nodes. The incorrect answer of 3 was a frequently seen answer to part (ii), obtained by dividing 6 by 2 and ignoring the correct method applied in the previous part.

Question 6

The response to part (a) was much improved from previous examinations with many students scoring full marks. Many different but clear methods of indicating what was printed were devised. However, answers to the second part were disappointing. Few students identified the correct answer – differing uses of the word 'multiple' were far more common.

Question 7

(a). The response to this part was very good and most students earned full marks.
(b)(i). Answers to this part were much improved from previous years. The majority of students made the transition from one inequality to the other very clear, including the actual substitutions required. (b)(ii). Graph drawing continued to be of a good standard with very few examples of slipshod and inaccurate execution. The objective line, as usual, caused the most problems. A minority of students produced a line through the origin as their apparent objective line. Unfortunately a number of these then shaded on one side or the other of this line thus rendering their feasible region incorrect. (b) (iii) and (c) These two questions proved to be by far the most difficult and some students did appear to be rushed in their working. Roughly half the students solved the problems correctly but most of these failed to earn full marks either by not specifying the unit of currency or by not describing precisely and accurately the numbers and types of each bouquet required. The question is set in a context and answers must reflect this to gain full credit.

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