



General Certificate of Education

Use of Mathematics 5351

UOM4/2 Applying Mathematics Paper 2

Report on the Examination

2009 examination - June series

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Applying Mathematics Paper 2 (UoM4/2) Examination

General

As in previous years, the recurrence relation and simulation questions were answered with more confidence than the remaining two questions that explore the use of functions to model certain situations. The use of trigonometric functions, as is often the case, appears to be particularly problematic for many. It is important in this paper that candidates are aware of how different numerical values of parameters in a function are related to aspects of the situation that it is being used to model (for example, how the amplitude of a trigonometric function is related to the height of a passenger rotating on a Ferris wheel). Candidates would also appear to benefit from being more proficient in their use of graphic calculators.

Question 1

Many candidates appeared comfortable working with recurrence relations and were proficient with the numerical work required. However, in (a) (i) and (b) (i), some candidates dropped marks because they did not show with enough care the full detail of the calculations made to arrive at the given answers.

When the basic recurrence relation is used to model population growth the most unrealistic factor of the model is that it leads to unbounded growth: this was not recognised by many candidates.

Whilst a considerable number of candidates recognised the role of the parameter that determines the limiting population in the final parts of the question only the highest achieving candidates were able to work with the algebraic equation given to determine this.

Question 2

The first two parts of this question required sketch graphs. Candidates need to take greater care when answering such questions: for example, it was important to label axes to make it possible to determine the form of the relationship. It was also important to relate the graph to the situation it represented. In this case, for example, it made little sense to have negative speed leading to a negative thinking distance. Again, in answering part (c) it was important for candidates to think about the situation being modelled: it was not sufficient to describe the situation in terms of the variables.

There were many correct responses to part (e) with a number of different approaches taken. Again, an understanding of the situation should have led to a rejection of the negative solution of the quadratic.

Question 3

Throughout this question, as in all questions on this paper, it is essential that the situation being modelled is fully understood and can be related to the mathematics used to model / represent this. For example, the first three questions required candidates to understand how the parameters of the given function relate to the situation being modelled (in this case the height of a passenger on a rotating ferris wheel).

As in previous years, trigonometric functions appeared to cause difficulties for many candidates. Consequently parts (b) and (d) of the question were only tackled successfully by a minority of candidates.

Part (e) of the question was answered correctly by very few candidates: this was disappointing, as it only required a little further thought and understanding beyond that required in part (a).

Question 4

As in previous years, the simulation question on this paper was answered with some confidence and relatively successfully by a substantial number of candidates, with very few being unable to gain a good proportion of the marks available. As always, it is important that candidates work with considerable care as it is easy when completing the table to make a slip and therefore lose some of the marks available.

When answering questions that require interpretation of the situation, for example in part (d), it is important that candidates justify their decisions by referring to the evidence on which these are based. Here, for example, it was expected that candidates would quantify the likelihood, according to the simulation, of winning or losing given one course of action or the other.

In answering the final part, a number of candidates considered ways of improving the simulation rather than considering how they might provide a more convincing argument to support their decision in response to the question in part (d).

Mark Ranges and Award of Grades

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