



**General Certificate of Education**

**Mathematics 6360**

**MM2A      Mechanics 2A**

**Report on the Examination**

*2007 examination - January series*

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## Written Component

### General

The candidates were very well prepared for the paper, showing thorough knowledge of the specification content and of the techniques required. The standard of work was mostly high, and solutions were concise and clearly presented. Algebraic work was mostly good, but in some cases answers were left unsimplified.

### Question 1

This proved to be a successful start for many candidates.

### Question 2

Part (a) was popular and done well. Part (b) was found harder than expected, with some considering the situation as static, and others omitting the weight, while sign errors were quite frequent.

### Question 3

While candidates realised that part (a) required differentiation, a significant number were not able to carry this out accurately. Part (b) proved more successful, but only a small minority of candidates were able to attempt part (c), the simplest solution involving maximisation of the appropriate trigonometrical function.

### Question 4

Part (a) was popular and done well. Part (b) often began well but many candidates were unable to find a correct and suitably simplified expression. A significant number did not know a correct formula for the acceleration, or confused  $v$  and  $\omega$ . Parts (c)(i) and (c)(ii) were mostly done well, and in part (c)(iii) those with correct radial equations usually completed the question.

### Question 5

Part (a) was done well although not all candidates related their coordinates of the centre of mass to the line  $CH$ . Part (b) was mostly done well but those taking moments about a point other than the 'foot' of the lamina sometimes omitted a force. Candidates knew the principle of mechanics required in answering part (c). However, weaknesses in handling inequalities spoiled many otherwise good solutions.

### Question 6

Most candidates completed part (a) convincingly. Part (b)(i) was popular, and in part (b)(ii) the majority of candidates were able to separate the variables correctly and attempt the integration. However, there were many errors, the most common being the omission of a constant of integration and careless slips involving signs.

### Question 7

Candidates were often very successful in parts (a) and (b). Most knew how to start part (c)(i) but elastic energy terms were sometimes omitted and there were many errors in potential energy terms. Part (c)(ii) was successful but not all selected the appropriate solution.

## **Coursework Component**

### **General**

There were a few transcription and addition errors made when totalling the scripts. Please ensure that the final marks are carefully checked prior to submission to AQA and for moderation. Please ensure scripts are marked in red pen and that calculations are checked for accuracy.

Only a small number of centres submitted work in this series. In the *Rollercoasters* task it is useful to relate the theoretical results to 'real-life' examples of coasters; this information is readily available on the Internet. Theoretical results should be clearly derived; there should be no assumption that the reader of the coursework 'knows the answer' already.

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

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