

A-level **MATHEMATICS**

Unit Mechanics 5
Report on the Examination

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General

This paper was taken by a smaller number of students than usual and many of these produced very good quality scripts.

Question 1

This question was generally done very well, with many students gaining full marks with just a few minor errors seen in the work of some students.

Question 2

The students did very well with part (a), with the vast majority of solutions correct. In part (b), a wide variety of different approaches were used by the students. Many of these were convincing but some, especially those based on energy approaches, were less so and did not provide enough detail to justify full marks. For part (c), there were again a good number of good solutions. The main issue here was that some students did not use the correct extension for the maximum tension.

Question 3

This question was also done very well. In part (a), a few students had difficulty with the particle of mass $5m$. Part (b) was also done well, but there were a few errors in solving the equation as students gave answers outside the range specified in the question. In part (c), there were a few minor differentiation errors. Some students worked in degrees rather than in radians.

Question 4

Almost all the students found the correct extension in part (a). There were more difficulties with part (b)(i) although the majority of students did well with this. Finding a correct expression for tension was the biggest issue. There were many fully correct solutions to the differential equation in part (b)(ii). The main issue was that some students made errors when working out the values of the constants.

Question 5

There were many complete solutions for part (a), with the vast majority of the students gaining full marks. The students found part (b) more demanding. The main issues here were errors in finding the terms to use in the formula for the components of the acceleration. Some students thought that the minimum value would be when $\sin \theta = 0$ rather than when -1 .

Question 6

Part (a) was quite demanding, with some students finding it difficult to deal with the fact that there was a connection between the radius and the mass of the sphere. There were a lot of good solutions to part (b), with errors often associated with finding the value of the constant of integration. Those who completed part (b) almost always gained full marks on part (c).

Mark Ranges and Award of Grades

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

Converting Marks into UMS marks

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UMS conversion calculator www.aqa.org.uk/umsconversion