FURTHER MATHEMATICS

General Certificate of Education

Summer 2023

Advanced Subsidiary/Advanced

FURTHER MECHANICS B – A2 UNIT 6

Overview of the Unit

The paper was well received by most candidates, but it appeared to be less accessible than the Summer 2022 paper. As usual, many high scoring scripts with exemplar responses were seen. There was no evidence to suggest that candidates found the paper too long to complete in the allocated time, as most candidates managed to attempt all the questions on the paper. Questions 5 and 6 were the most demanding questions on the paper, with facility factors of less than 50.

Comments on individual questions/sections

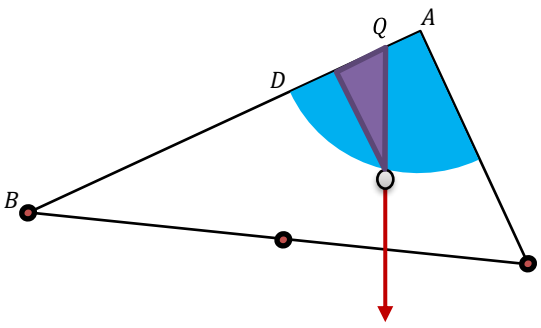
Q.1 Candidates continue to be adept at answering questions assessing the topic of rigid bodies and hence many fully correct solutions to parts (a) and (b) were seen. Only a handful of candidates provided exact forms for answers to parts (a) and (b), although this was not a requirement of the question. Many candidates were less successful in securing the final mark in part (c), as they were often unable to provide an articulate reason to support their answer.

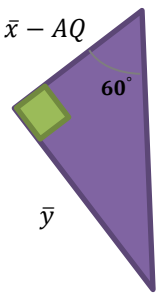
Q.2 The response to this question was not as good as expected. Unfortunately, some candidates did not know the formula for the volume of a cone. Furthermore, a small number of candidates were unaware that the formula for the volume of a cone could simply be stated, unless instructed otherwise. Consequently, integration was often used to find the volume and, due to the complexity of the method, almost all of these attempts were unsuccessful and cost candidates valuable examination time.

Q.3 Candidates have always demonstrated a strong understanding of Simple Harmonic Motion and this question, which was set in context, was no exception.

Q.4 This was the most successful question on the paper. It was reassuring to see that candidates were not troubled by the algebraic context of the question.

Part (c) provided the greatest challenge since, despite most candidates considering a simple sketch, many were still unable to identify the appropriate triangle, as shown below.





Q.6 This was the first time that a second-order differential equation has appeared on Unit 6. Efforts in parts (a) and (b) were generally very good. Part (c) was less successful, with most errors occurring due to incorrect differentiation of candidates' expression for x. In part (d), many candidates recognised that the damping was 'critical', but did not provide a legitimate reason to support their answer.