

AS/A LEVEL GCE

Examiners' report

MATHEMATICS (MEI)

3895-3898, 7895-7898

4758/02 Summer 2018 series

Moderated component

Version 1

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Introduction

The coursework component of Differential Equations 4758 aimed to provide candidates with the opportunity to undertake the various steps of problem solving, comparing theoretical values predicted using modelling to experimental data. Candidates could approach the coursework in two different ways.

(A) In this case the modelling cycle is investigated in some depth, whilst the check against reality may use the data from published sources, from experiments which the candidate has not actually performed or from experience; there must however be a quantitative element in such data.

(B) The work presented is approximately evenly divided between developing the model, and one or more experiments conducted by the candidate to verify the quality of predictions from it and/or to inform its development.

OCR hopes that you and your candidates have enjoyed working through the coursework task. Although not part of the reformed A Level Further Mathematics assessment structure, you may find this task a useful teaching and learning activity when covering the Differential Equations content under DfE criteria reference I1-I9.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/516950/GCE_AS_and_A_level_subject_content_for_further_mathematics_with_appendices.pdf

Resitting Differential Equations

This was the final year of the unitised A Level Further Maths qualification 7896. There is a resit series in 2019 for those candidates that have certificated 7896 in a previous year. Those candidates that wish to resit 4758 may choose to carry over their coursework mark and only sit the examination paper, or to undertake a new coursework task and sit the examination paper (it is not possible to only complete a new coursework task and carry over the previous examination mark).

The entry code 4758B should be used for those candidates that wish to carry over their coursework task.

The entry code 4758A should be used for those candidates that wish to complete a new coursework task. Please note that these candidates are not permitted simply to improve a previous, marked, piece of work; they must undertake a new coursework task.

Administration

It was pleasing to note that moderators reported that most centres had administered the coursework efficiently, meaning that marks were submitted on time and the sample request dealt with speedily. This all made the process of external moderation very much easier.

In a very small number of instances, marks were not submitted until many days after the deadline set by OCR and the sample sent very late. This causes pressure on moderators who have less time to do their work. There were few clerical errors, and inconsistent marking resulting in an invalid order of merit occurred only in a handful of centres.

The major problem for moderators is caused when assessors tick work that has not been checked and in a number of cases credit was being given for incorrect work.

The marks of candidates in most centres were appropriate and acknowledgement is made of the amount of work that this involves to mark and internally moderate. The component specific comments are offered for the sake of centres who have had their marks adjusted for some reason. Centres should note that having marks adjusted does not imply inconsistent marking, merely that the level has been misjudged.

Common issues

When investigating modelling tasks it should be appreciated that the criteria in Domains 2 and 4 only apply to the initial model. While there may well be, for example, variation considered for the revised model, this cannot be used to fulfil the criteria in these domains.

Although there was a range of coursework tasks presented, as in previous years *Aeroplane Landing* and *Cascades* are still the most popular choices for many candidates. In the case of the former, work is still being produced where the initial model is rejected on the basis of the motion in the first 9 seconds, without considering the effect of the braking motion. This should be penalised. Similarly, in the latter case the focus of '*Cascades*' has to be on the flow through the second container. The initial model should not be rejected on the basis of the flow through a single container. This should be used in order to calculate the necessary parameter.

It is also worth mentioning that, particularly as the Differential Equations are given for the '*Interacting Species*', a very clear description of the parameters is expected.

The essential function of the coursework element of this module is to test the candidates' ability to follow the modelling cycle. That is, setting up a model, testing it and then modifying the assumptions to improve the original model. If two or three models are suggested at the outset and tested, more or less simultaneously, and the best chosen, then the modelling cycle has not been followed.

Finally, it is usually easier to agree with those assessors that provide the most detailed signposting, through comments and references, of where and why marks were credited.

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