

Coimisiún na Scrúduithe Stáit

State Examinations Commission

###### Leaving Certificate Examination 2023

Applied Mathematics

Mathematical Modelling Project

Reporting Booklet

Higher and Ordinary Level

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| --- | --- |
| **Examination Number**  | 6 Digit Number |
| **Day and Month of Birth**  | Format DD/MM |

100 marks

 Information for Candidates, Teachers and Schools

**Completion of the report**

* Your report on your mathematical modelling project must be completed in this booklet, using the prescribed structure. The report must be completed and handed over to your class teacher by **03 February 2023**. The report will be submitted through the SEC student portal.
* The State Examinations Commission will provide further information in due course, in the relevant circular, in relation to the appropriate file name to use and how your school will upload the digital coursework to the school portal.
* It is your responsibility to ensure that all electronic material submitted is free from viruses etc., so that the file can be opened for assessment.
* **Examiners will only mark work that is submitted as outlined in this booklet.**
* Your report must not exceed 900 words (excluding references, equations, diagrams, graphs, etc.). Your report must not include more than 20 images. An image can be any relevant table, graph, chart, diagram or photograph. The total file size of your digital report including all embedded images must not exceed 100 MB. Videos must not be included in your report.
* You must not change the structure or format of the booklet in any way and should adhere to the following formatting guidelines:
	+ The text should be in Arial, font size 12.
	+ You may make use of text editing features such as italics, bullets, etc.
	+ Document margins have been set and should not be changed. The text margins for each A4 page are:
		- left margin: 20 mm
		- right margin: 20 mm
		- top margin: 20 mm
		- bottom margin: 35 mm
* You are not allowed to change these settings or otherwise circumvent these restrictions, which are set to facilitate online marking. You are also not allowed to attach or include links to any other material (other than references).
* When referring in the body of the report to any specific image, the image must be properly labelled (Figure 1, Figure 2, etc.). Images should not be used as a means to include additional text. It is advisable not to use images where a person or persons in these images may be identifiable.
* Penalties may apply where the overall word count or image count or file size is exceeded.
* You must reference any information used in your report, such as: publications – including books, professional journals and government reports; online sources and other types of media; specialist organisations and relevant individuals. To include such material without properly referencing the source will be considered plagiarism.
* Your project must be backed up by the school on a secure encrypted storage system until the State Examinations Commission is satisfied that the projects have been received and are accessible. This will require material being retained until the examination process is complete, including until after the appeal process is completed.

**Authentication**

* The mathematical modelling project and report must be your own individual work – authenticated by yourself, by your teacher and by your school management authority. Authentication is an important part of how the State Examinations Commission ensures fairness to everybody in the assessment of coursework.
* While you may carry out background research relevant to the brief on your own and/or at home, all other parts of your project and your report must be completed under the supervision of your teacher in accordance with the conditions set down by the State Examinations Commission as outlined in Circulars S69/04 and S68/08, which are available at [www.examinations.ie](http://www.examinations.ie).
* Any case of suspected copying, plagiarism, improper assistance or procurement of work prepared by another party will be thoroughly investigated. These actions are breaches of examination rules and attract the penalties described in the *Rules and Programme for Secondary Schools*. The penalties include: loss of the marks for the project, loss of the subject, loss of the entire examination in all subjects, or being debarred from the Certificate Examinations in subsequent years. There may be serious consequences for any person who provides you with inappropriate assistance, as this is an offence under the Education Act 1998.
* Your teacher must supervise your completion of both the project and the report. If your teacher cannot confirm that the project and report are your own work, and that you carried out the project and completed the report under your teacher’s supervision, the State Examinations Commission will not accept your report for assessment. In that case, you will forfeit the marks for this component of the examination. Teachers and the authorities of schools are familiar with the detailed requirements to ensure that practical and project work is valid for examination purposes. You should comply fully with all requests that are made by the teacher and the school in order to enable authentication of your work.
* Responsibility for complying with examination requirements rests with you, the candidate. If the requirements are not followed, your teacher and school will have no choice but to bring this to the attention of the State Examinations Commission.

 Report Structure and Mark Allocations

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| --- | --- | --- |
| ***Section*** | **Indicative Content** | **Marks** |
| *Introduction and Research* | * Background research on brief
* Identify specific problem(s) to be modelled
* Research specific problem(s)
* Identify relevant variables
* Present relevant data
* Provide citations and references
 | **20** |
| *The Modelling Process* | * Explain and justify model and assumptions
* Compute solutions
* Present solutions using appropriate mathematical and graphical representations
* Analysis of solution(s) – sensitivity to changes in assumptions; comparison with other solutions or real-world data
* Iterative process
 | **50** |
| *Interpretation of Results* | * Interpretation of solution(s) in real-world context
* Conclusions and reflections
 | **15** |
| *Communication and Innovation* | This is not a distinct section of the report.* Innovative and creative approaches
* Overall coherence
 | **15** |

# **Mathematical Modelling Project**

Type into the space below the title of your mathematical modelling project.

|  |
| --- |
| Click here to enter text. |

## **Word Count**

Do not complete the following table until after you have finished your report.

|  |  |
| --- | --- |
| *Section* | Number of words |
| *Introduction and Research* | Click here to enter text. |
| *The Modelling Process* | Click here to enter text. |
| *Interpretation of Results* | Click here to enter text. |
| *Total* | Click here to enter text. |

Introduction and Research 20 marks

|  |
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| Click here to enter text. |

The Modelling Process 50 marks

|  |
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| Click here to enter text. |

Interpretation of Results 15 marks

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| Click here to enter text. |