

Higher Level Applied Mathematics Mathematical Modelling Project – Report Structure and Mark Allocations

<i>Section</i>	Indicative Content	Marks
<i>Introduction and Research</i>	<ul style="list-style-type: none"> • 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
<i>The Modelling Process</i>	<ul style="list-style-type: none"> • 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
<i>Interpretation of Results</i>	<ul style="list-style-type: none"> • Interpretation of solution(s) in real-world context • Conclusions and reflections 	15
<i>Communication and Innovation</i>	<p>This is not a distinct section of the report.</p> <ul style="list-style-type: none"> • Innovative and creative approaches • Overall coherence 	15

To be noted by examiner:

- Before commencing marking read the entire reporting booklet to familiarise yourself with the content presented for marking.
- Be careful not to penalise skilful brevity, nor to reward unwarranted length.
- Mark descriptors should be interpreted in the context of the challenges and demands of the specific problem which the candidate has chosen.

Higher Level Applied Mathematics Mathematical Modelling Project – Marking Scheme

1 Introduction & Research (20 marks)	Very thorough 16 - 20	Thorough 11 – 15	Basic 6 – 10	Very basic 0 – 5
	Problem and variables identified, research [resented and cited, data presented where relevant	Work of a good standard, but some issues with, for example, identification of variables or citation of research	Basic statement of problem with some evidence of research undertaken	Statement of problem with no evidence of research
	Very thorough 12 - 15	Thorough 8 – 11	Basic 4 – 7	Very basic 0 – 3
2a The Modelling Process – Explain & Justify (15 marks)	Model fully explained, including further iterations, assumptions identified and justified	Model well explained, assumptions clearly described	Model and assumptions poorly explained	Model outlined with no explanation of assumption
	Very thorough 16 - 20	Thorough 11 – 15	Basic 6 – 10	Very basic 0 – 5
2b The Modelling Process – Compute & Iterate (20 marks)	Computation of mathematical solution(s) fully explained. Full iterative process	Partial explanation of mathematical solution(s). Iteration(s) presented.	Solutions(s) computed without explanation. Some evidence of iterative process	Solution(s) computed without explanation
	Very thorough 12 - 15	Thorough 8 – 11	Basic 4 – 7	Very basic 0 – 3
2c The Modelling Process – Present & Analyse (15 marks)	Solution(s) presented using appropriate mathematical/graphical representations. Solution(s) analysed with reference to model's assumptions or other solutions or real-world data	Solutions(s) presented and analysed, but with some issues with, for example, mathematical/graphical representations	Solution(s) presented. Some evidence of analysis.	Solution(s) presented.
	Very thorough 12 - 15	Thorough 8 – 11	Basic 4 – 7	Very basic 0 – 3
3 Interpretation of Results (15 marks)	Excellent interpretation of results in a real-world context. Conclusion(s) drawn and project reflected on.	Good interpretation of results in a real-world context. Conclusion(s) drawn or project reflected on.	Some interpretation of results presented. Limited conclusion(s) drawn or limited reflection on project.	Results interpreted poorly or conclusion(s) drawn poorly or project reflected on poorly
	Very thorough 12 - 15	Thorough 8 – 11	Basic 4 – 7	Very basic 0 – 3
4 Communication & Innovation (15 marks)	Project approached and/or presented in a highly innovative and/or creative way. Excellent overall coherence.	Project approached and/or presented with innovation/creativity. Good overall coherence.	Project approached or presented with limited innovation/creativity. Fair overall coherence.	Little or no evidence of innovation/creativity. Poor overall coherence.