

Commentary on candidate evidence

The candidate evidence has achieved the following marks for each section of this the project.

Please note: this commentary contains the equivalent of a full project response; however, this is not a complete project submitted by one candidate. We have taken the work of different candidates and pieced it together, to better exemplify a range of responses across the different sections of the project. As such, there is no exemplification of the last section, 'presentation'. Please refer to the marking instructions for information on this section.

Candidate 2

Outline (4 marks awarded)

Aims, objectives and methodology: The candidate's outline contains the aims of the project, project objectives and methodology, and relevant initial analysis, but does not include formally-referenced sources. **(2 marks)**

Outline specification and resources requirements: The outline contains notes on key resources required, timings and contacts **(2 marks)**

Research, analysis and specification (9 marks awarded)

Analysis of the problem or issue and identifying suitable factors to research: The candidate has identified some sub-systems with some notes from relevant analysis, including sources. **(3 marks)**

Research: The candidate has provided a research strategy with notes from relevant research. **(2 marks)**

Specification: The candidate has developed the specification from the outline, covering most sub-systems with numerical values for most inputs and outputs. **(4 marks)**

Production and maintenance of a project plan (7 marks awarded)

Project plan: The candidate has produced a project plan including a Gantt chart and detailed some targets. The resource list covers some resources. **(4 marks)**

Project plan maintenance and/or refinement: The candidate has given evidence of ongoing refinement of the plan and detailed reflective commentary on any changes to the plan. **(3 marks)**

Mathematical modelling and analysis (11 marks awarded)

Mathematical modelling and analysis of a major 'electronics and control' sub-system: The candidate has used mathematical modelling and analysis, using techniques appropriate to the level of the course. As the lighting and motor are two separate sub-systems, only one modelling technique has been used correctly for the control sub-system. **(3 marks)**

Mathematical modelling and analysis of a major 'mechanisms and structures' sub-system: The candidate's buoyancy system has three identifiable stages of analysis. They have used mathematical modelling and analysis, using a range of techniques appropriate to the level of the course. Results are applied to the project solution using realistic, fully justified numerical values. A detailed, reflective commentary has been provided. **(5 marks)**

Mathematical modelling and analysis of **another** major 'electronics and control' **OR** 'mechanisms and structures' sub-system: Nodal analysis is at Higher level and is not connected to the drag calculation, therefore only one modelling technique has been used correctly for the propulsion system. Results are applied to the project solution, using realistic numerical values with reflective commentary. **(3 marks)**

Constructing and/or simulating a solution (9 marks awarded)

Construction and/or simulation of a major 'electronics and control' sub-system: The candidate has constructed a major sub-system, with names, values and

function of most components correctly annotated. They provided a description of the purpose of the sub-system. **(4 marks)**

Construction and/or simulation of a major 'mechanisms and structures' sub-system: The candidate has constructed a major sub-system, with names, values and function of some components annotated. They gave a description of the purpose of the sub-system. **(3 marks)**

Materials and components: The candidate has provided limited justification for their decisions on choice of materials and components. **(1 mark)**

Reflective commentary on construction and/or simulation: The candidate has provided some reflective commentary. **(1 mark)**

Evaluation (4 marks awarded)

Evaluation of the solution: The candidate has produced limited qualitative and quantitative evaluation of the solution with limited valid and relevant conclusions. **(2 marks)**

Evaluation of the process: The candidate has produced limited evaluation of the development process. **(1 mark)**

Further developments: The candidate has provided a description of possible further developments. **(1 mark)**