



Product Design

Extended Case Study Guidance
for Advanced Higher

September 2004



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Extended Case Study Guidance for Advanced Higher

For use in National Qualifications Advanced Higher Courses in and after 2005

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Allocation of marks

Assessment Criteria	Marks available
Section 1 — Problem	20 marks
(a) Problem Definition	10
(b) Project Management Planning	10
Section 2 — Creative and Imaginative Development	80 marks
(a) Quality of Ideas and Concepts	20
(b) Pathways and Links	20
(c) Synthesis and Solution	20
(d) Justification and Reasoning	20
Section 3 — Communication	30 marks
(a) Quality and Use of Communication	10
(b) Selection and Range of Communication	10
(c) Structure	10
Section 4 — Summary	20 marks
(a) Project Management Review	5
(b) Summary of Proposal	15
Total	150 marks

Section 1 — Problem

Available marks: 20

(a) Problem Definition

10 marks

The problem definition must address:

- ◆ who the candidate is aiming the solution at
- ◆ what the candidate will be tackling
- ◆ when and where the candidate's solution would be appropriate
- ◆ why there is a need for the solution

(b) Project Management Planning

10 marks

Project management should define:

- ◆ how the candidate intends tackling the tasks
- ◆ the key tasks and stages that will be covered
- ◆ the timescales and time lines allotted to tasks
- ◆ a project plan

Section 2 — Creative and Imaginative Development

Available marks: 80

Note: This Section will consist of a variety of mediums including annotated graphics, illustrations and modelling along with any related text.

(a) Quality of Ideas and Concepts **20 marks**

(b) Pathways and Links **20 marks**

- ◆ Imagination and innovation in the generation of a number of concepts and ideas should be evident. The range and depth of these ideas and concepts should show evidence of innovation. The marks awarded will reflect the depth and extent of exploration of ideas and concepts. In this exploration, the candidate should demonstrate a sound appreciation of relevant design factors and show expertise in communicating these ideas and developing features within. Ideas generation will vary from simple linear models to lateral thinking.
- ◆ Clear pathways and links should be evident between ideas and concepts. This will show the candidate's depth of understanding and level of critical thinking with regard to design problem solving. These links can be communicated using a variety of mediums.

Guidance note — It should be apparent that candidates have a sound knowledge of design issues and technology.

(c) Synthesis and Solution **20 marks**

- ◆ From the ideas and concepts explored and created, candidates must identify the most promising (and potentially viable) and take these forward for synthesis. This synthesis should show how the candidate narrows down the alternative features through analysis and sound reasoning without hindering their imagination and innovation. The synthesis should show how the candidate focuses, integrates, modifies, adjusts and balances features and ideas to produce viable design solutions.

Guidance note — A firm design proposal will emerge from this synthesis.

(d) Justification and Reasoning **20 marks**

- ◆ Throughout Section 2, candidates should demonstrate reasoned decision making and logical thinking. This will range from personal knowledge and fully researched information to firm justification of ideas, features and concepts. Candidates should show evidence of recognition of good or quality ideas. This justification will show a wide knowledge base from manufacturing techniques and modern materials to forward thinking idealism and leading edge thinking.

Guidance note — Candidates should avoid making decisions using personal judgements only.

Section 3 — Communication

Available marks: 30

(a) **Quality and Use of Communication** **10 marks**

(b) **Selection and Range of Communication** **10 marks**

(c) **Structure** **10 marks**

A candidate will be required to convey his/her project clearly and concisely by applying a range of communication techniques.

There is no limit or restriction placed on the communication style, techniques, or skills used other than that they should be appropriate to support the communication of the issues and approach undertaken in the project.

When considering which communication skills or techniques to apply at any stage of the project, the candidate will be required to:

- ◆ communicate the facts and ideas within the project to a high standard
- ◆ select and use an appropriate range of methods of communication
- ◆ apply an appropriate structure to the communication

Marks in this Section will be awarded equally across the above criteria.

Section 4 — Summary

Available marks: 20

(a) Project Management Review

5 marks

Each candidate must produce an accurate and detailed review of the project management showing intended and actual activities carried out.

Although the method of recording the project tasks is not prescriptive and is at the discretion of the candidate, the method selected must have been appropriate to control, evaluate and monitor the progress of the project.

Candidates should select key tasks which can be clearly identified as significantly contributing to the:

- ◆ quality of decision making
- ◆ direction of the project
- ◆ value of the learning experience

(b) Summary of Proposal

15 marks

A summary outlining the key features of the design proposal will be produced. The candidate should show where critical decisions were made, ie it should reflect the 'how and why' processes of decision making. The summary should show evidence of autonomy in its conclusions.

The summary will show the complete proposal and highlight the features and concepts within. All features will be justified in terms of relevant design factors including materials and possible manufacturing techniques.

When completing the summary, candidates must refer back to their definition in Section 1(a). They must describe how well their final design proposal satisfies the initial design brief.