



General Certificate of Secondary Education

Technology and Design

Controlled Assessment Task

Unit 3: Design and Manufacturing

[GTY31]

VALID FROM JANUARY 2022

INSTRUCTIONS FOR THE CONTROLLED ASSESSMENT TASK

You have approximately **40 hours** to complete the task.

Your **design portfolio** should be a maximum of **ten A3 one side only** sheets or equivalent.

All text should be size **12**. Titles should not exceed size **16**.

Students may present the portfolio in an electronic format.

Quality of written communication will be assessed throughout the design portfolio.

Candidates' work to be submitted **May 2023**

Controlled Assessment Tasks must comply with the Regulations as detailed in the Subject Specification.

NB: Some Controlled Assessment Tasks instructions may constitute more than 1 page.
Please have all the information you need to complete the task if printing from a computer.

UNIT 3: Design and Manufacture Project

Instructions for teachers and students

This unit is **compulsory** for all students.

The Design Portfolio

The **design portfolio** should be a maximum of **ten A3 sheets** on one side only or equivalent. All text must be size 12. All titles should not exceed size 16.

Students may present the portfolio in an electronic format.

Students should understand that the design process is **non-linear** and creativity should be evident throughout the process.

The design portfolio is an integral part of the design project. Each design project will have its own characteristics and relevant processes, but all design portfolios should include the following:

- a chosen theme and design brief;
- a description and understanding of the design opportunity/problem;
- research and analysis of products and/or Target Market Groups (TMGs) as appropriate to the design opportunity/problem;
- freehand sketching and computer-aided design (CAD) – these must be in all design portfolios;
- specifications which identify key design criteria;
- an appropriate range of freehand concept sketches;
- an appropriate range of graphical techniques;
- clear and succinct annotation;
- evidence of creative thinking, problem solving and decision-making;
- the development of the concept(s) using freehand sketches and/or CAD/computer modelling;
- information on how the proposed solution may perform/improve, considering function, form, size, ergonomics, safety and sustainability, as appropriate;
- manufacturing and assembly details of the proposed solution;
- evidence of a physical model/mock-up to aid development of the proposed solution;
- working drawing(s) showing all of the necessary details for the manufacture of the key parts; and
- evidence of testing and evaluation of the final solution to include appropriate modifications.

Quality of written communication will be assessed throughout the portfolio.

Manufacturing

The manufactured solution should be functional and appropriately presented.

Students should understand that the design process is **non-linear** and creativity should be evident throughout the process.

The solution should have:

- scaled physical model(s) which relate(s) to and convey(s) a clear understanding of the final solution, proportion, form and function;
- evidence of the function and form of the prototype;
- appropriate materials and fabrication techniques;
- evidence of skills, precision, quality of manufacture, finish and attention to detail;
- evidence of working under test conditions;
- evidence of safety having been taken into account in its final construction and use;
- evidence of templates, patterns, jigs and formers where appropriate to assist in production; and
- evidence of creativity.

Students are expected to demonstrate design capability, creativity and innovation, using hand and computer numerical control (CNC) manufacturing skills, where appropriate, in the production and outcome of all model(s) and final prototype.

The design and manufacturing project carries a weighting of **50%** of the full qualification and has an approximate time guidance of 40 hours.

Candidates must not exceed the **10 A3** page limits of the portfolio component of this unit.

Themes

Candidates submitting this component in the summer of 2023 series **must** choose **one** of the following themes.

Theme 1

City transport Hub:

A modern transport hub, fit for the 21st century, is being developed for a major city. The hub will accommodate buses and trains and contain car parking facilities as well as a public square. The hub will provide a good user experience and have consideration for environmental issues, tourism, modern technologies, and efficiency of services.

Theme 2

Fit for Life:

Research has found that regular participation in physical activity has long term physical and psychological health benefits. Developing a positive attitude through engagement in physical activity can enhance self-esteem, resilience and overall personal fitness.