



Rewarding Learning

General Certificate of Secondary Education

2023

Engineering and Manufacturing

Unit 1

Controlled Assessment Task

Design

[GEM11]

VALID FROM SEPTEMBER 2023

INSTRUCTIONS FOR THE CONTROLLED ASSESSMENT TASK

You have approximately **20 hours** to complete the task.

The design portfolio should be a maximum of **twelve A3 pages on one side** only or equivalent. All text should be **font size 12**. Titles should not exceed **font size 16**. Candidates may present the portfolio in hard copy or electronic format.

Centres select the task that is best suited to their needs.

INFORMATION FOR CANDIDATES

The Controlled Assessment Task is **marked out of 100** and carries a **weighting of 25%**.

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

Candidates' work to be submitted **May 2024**

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

NB: Some Controlled Assessment Tasks may constitute more than 1 page.

Please check you have all the information you need to complete the task if printing from a computer.

Unit 1: Design

Instructions for teachers and candidates

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

The design portfolio should be a maximum of **twelve A3 pages on one side** only or equivalent. All text should be **font size 12**. Titles should not exceed **font size 16**.

Candidates may present the portfolio in hard copy or electronic format.

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

Candidates are expected to:

- analyse a given design brief and research similar products;
- produce a detailed product specification;
- generate a range of concept sketches;
- evaluate and justify the design concept for development;
- develop a final solution to meet the requirements of the specification;
- produce engineering drawings of the final solution; and
- present a final solution with proposals for manufacture on an industrial scale.

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

Candidates must choose **one** of the following design tasks:

Task 1: Electronic Devices – Tablet Stand

Design Opportunity:

The use of electronic equipment such as tablets and laptops in business and education has become commonplace in modern society.

You have been asked to design a tablet stand for a local company which is seeking to bring a product to market that will support the increased demand for employees and school-aged children to complete work at home. The company is keen to bring the product to market as soon as possible, and plans to manufacture 12 000 of the new tablet stands for potential clients.

Your design must:

- be able to fit a wide range of tablets that are available on the market;
- incorporate a mechanism that can securely hold a tablet in place;
- allow the user to adjust the viewing angles of the tablet;
- use materials that are lightweight, but do not compromise the durability of the stand;
- provide good stability for the tablet when in use;
- be less than 1 kg in weight so that it can be easily transported;
- be collapsible to assist with storage and portability;
- cost no more than £20 (per unit) to manufacture; and
- have an appropriate aesthetic finish to appeal to the target market.

Task 2: Agriculture – Poultry Feeder

Design Opportunity:

Hobby farming is a common recreational activity for people living in rural and urban locations.

You have been approached by a local farm supplier to design and manufacture a poultry feeder that will be appropriate for this niche sector. The primary aim of the design is to offer a cost effective alternative to the large scale feeders used in commercial farming. The farm supplier has requested an initial order of 12 000 feeders.

Your design must:

- be able to hold at least 5 kg of food pellets;
- be able to keep the food pellets dry during adverse weather conditions;
- not exceed £20 (per unit) for materials and manufacture;
- use materials that are suitable for outdoor conditions;
- be able to feed up to 6 birds simultaneously;
- have a method to lift the feeder into location;
- be easily cleaned to maintain hygiene standards;
- release pellets gradually to the birds; and
- weigh less than 3 kg (when empty) to ease transportation.