



*Rewarding Learning*

**General Certificate of Secondary Education**

**2022**

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## **Engineering and Manufacturing**

Unit 1

### **Controlled Assessment Task**

Design

**[GEM11]**

**VALID FROM SEPTEMBER 2022**

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#### **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 2023**

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: Gaming console storage solution**

**Design Opportunity:**

Playing computer games is a popular recreational activity enjoyed by gamers of all ages. There are an estimated 2.2 billion gamers worldwide, so it is a lucrative sector that continues to develop and attract investment.

You have been approached by a leading high street gaming brand, to design a gaming console storage solution to assist gaming enthusiasts to store their equipment safely and securely. The company plans to manufacture an initial quantity of 10000 units.

Your design must:

- be able to store a console and two game controllers;
- incorporate an anti-tamper locking mechanism that will prevent unauthorised access to the equipment;
- consider how the console can be kept cool during prolonged use within the storage solution;
- be less than 8 kg in weight to allow it to be moved easily by customers;
- incorporate a method for lifting the solution that is ergonomically effective for the user;
- be as compact as possible to fit discretely where used;
- be able to hold the weight of the stored equipment up to a maximum of 10 kg;
- not exceed £50 for materials and manufacture; and
- use materials and processes that are cost effective.

## **Task 2: DIY work platform**

### **Design Opportunity:**

In 2020 DIY stores made retail sales of £7.1 billion and market research shows that 52% of the UK population engage in DIY tasks in the home.

You have been approached by a leading DIY store chain to design and manufacture a work platform to assist users in home decoration, repair and maintenance both inside and outside the home. The company plans to manufacture an initial quantity of 10000 units.

Your design must:

- provide a raised area capable of supporting 200 kg with a suitable factor of safety;
- incorporate a safe and secure method to allow for quick assembly and height adjustment between 300 mm and 1200 mm;
- be easily moveable by one person within and around a domestic dwelling;
- provide a means to store a range of tools while the product is in use;
- consider how the work platform will be stored when not in use;
- use materials that are resistant to solvents, caustic chemicals and prolonged exposure to weather conditions.
- the platform surface must be non slip and accommodate two adults;
- consider possible hazards and ergonomics to ensure user safety; and
- not exceed £50 for materials and manufacture.