

6.3 ASSESSMENT EVIDENCE FOR UNIT 1: DESIGN AND GRAPHICAL COMMUNICATION

You need to produce evidence in your portfolio of a product design specification and a design solution for an engineered product, working from a customer design brief. Your design specification and design solution **must** include:

- a** details of the customer design brief, the design specification and associated information [9 marks];
- b** evidence of your technical skills, drawing techniques and knowledge of drawing standards [7 marks];
- c** identification of the stages involved in making your design solution with related quality control procedures, including health and safety issues [9 marks];
- d** how you communicated your selected design solution to the customer, by developing sketches, notes and working drawings [10 marks];
- e** consideration of how your final product will be made, identifying the engineering processes and quality standards that will be used to produce it [15 marks].

A typical candidate at grades GG, FF, EE will:	A typical candidate at grades DD, CC, BB will:	A typical candidate at grades BB, AA, A*A* will:	Mark	Max
a1 Produce a design specification from a given design brief. <p style="text-align: right;">0 1 2 3</p>	a2 Produce a detailed design specification, using customer feedback and associated information. <p style="text-align: right;">4 5 6</p>	a3 Justify their final design specification by explaining how they used customer feedback and associated information. <p style="text-align: right;">7 8 9</p>		9
b1 Demonstrate a basic level of accuracy in drawing, using appropriate drawing standards. <p style="text-align: right;">0 1 2 3</p>	b2 Use drawing techniques and appropriate standards accurately in developing a range of design ideas. <p style="text-align: right;">4 5</p>	b3 Fully justify the use and accuracy of the drawing techniques that they have used to develop their design ideas. <p style="text-align: right;">6 7</p>		7
c1 Identify health and safety issues related to their design solution. <p style="text-align: right;">0 1 2 3 4</p>	c2 Identify the quality control procedures that would be used in each stage of making the product in their design solution. <p style="text-align: right;">5 6 7</p>	c3 Evaluate quality control, quality assurance and total quality management applied to making the product in their design solution. <p style="text-align: right;">8 9</p>		9

<p>d1 Use diagrams, sketches and other appropriate methods to present their design solution to the customer.</p> <p style="text-align: right;">0 1 2 3 4 5</p>	<p>d2 Use diagrams, sketches and other appropriate methods, including modelling, to explain their design solution to the customer.</p> <p style="text-align: right;">6 7 8</p>	<p>d3 Use diagrams, sketches, working drawings and other appropriate methods, including modelling, to justify their design solution to the customer.</p> <p style="text-align: right;">9 10</p>		10
<p>e1 Identify the engineering processes that would be used to produce their final product.</p> <p style="text-align: right;">0 1 2 3 4 5 6 7</p>	<p>e2 Identify the stages and associated quality assurances that will be used to make their final product.</p> <p style="text-align: right;">8 9 10 11</p>	<p>e3 Evaluate and justify the stages and associated quality assurances they will use to make their final product, with particular reference to 'real world' engineering.</p> <p style="text-align: right;">12 13 14 15</p>		15
<p>Note: Although you will be given an interim mark out of 50 by your teacher, this mark will be moderated by OCR to make sure that it is in line with national standards. The grade (A*A* to GG) equivalent to this moderated mark will be determined at an Awarding Meeting convened for each examination series.</p>				Total 50

6.4 GUIDANCE FOR TEACHERS

6.4.1 Guidance on Delivery

Engineers are often asked to provide ideas to solve engineering problems. The client presents the problem in the form of a design brief. The engineer then provides various solutions, one of which can be taken forward and developed as a final design solution.

In this unit candidates are to develop graphical techniques, using the design process. It is important that the final design solution is not merely a manufacturing specification.

A range of graphical techniques will need to be taught including those mentioned within the unit, although it is not the aim of this unit to produce occupational competences in these techniques at this level.

For many engineering sectors it is important that candidates are able to design an electro-mechanical product that includes a variety of components from electrical and mechanical fields. However, for teaching purposes, it may be more relevant to look at these separately and then bring them together in terms of the product at a later stage.

Real contexts such as modifying an existing design may make assignments more manageable and interesting to the candidates.

It is important that, throughout the unit, candidates develop the ability to interpret engineering drawings and become conversant with the conventions used.

6.4.2 Guidance on Assessment

Coursework evidence can take a number of forms. A candidate portfolio can consist of any appropriate form of evidence, including teacher/tutor comments, photographs, taped and video evidence, supported witness statements and paper based evidence.

Where Centres are unable, for logistical reasons, to visit, or receive input from, local engineering companies, teachers/tutors should use video and simulations to give candidates a feel for industrial manufacturing processes.

When grading the portfolio for this unit you must consider the following general qualities which distinguish between grades. The candidate shows:

- increasing depth of understanding of the unit content, showing greater depth and breadth;
- increasing coherence, comparison and a greater ability to draw valid conclusions when designing;
- greater independence and originality of design ideas;
- increasing skill and confidence in carrying out design work;
- greater skills in using a variety of graphical communication techniques.