



ASSESSMENT and  
QUALIFICATIONS  
ALLIANCE

## General Certificate of Education

---

# Design and Technology Food Technology 5541/6541 2008

Material accompanying this Specification

- Specimen Papers and Mark Schemes
- Reports on the Examination
- Teachers' Guide

# SPECIFICATION

This specification will be published annually on the AQA Website ([www.aqa.org.uk](http://www.aqa.org.uk)). If there are any changes to the specification centres will be notified in print as well as on the Website. The version on the Website is the definitive version of the specification.

Further copies of this specification booklet are available from:

AQA Logistics Centre, Unit 2, Wheel Forge Way, Ashburton Park, Trafford Park, Manchester, M17 1EH.

Telephone: 0870 410 1036 Fax: 0161 953 1177

or

can be downloaded from the AQA Website: [www.aqa.org.uk](http://www.aqa.org.uk)

Copyright © 2006 AQA and its licensors. All rights reserved.

#### COPYRIGHT

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

# Contents

## Background Information

- |   |   |   |
|---|---|---|
| 1 | Advanced Subsidiary and Advanced Level Specifications | 5 |
| 2 | Specification at a Glance                             | 6 |
| 3 | Availability of Assessment Units and Entry Details    | 7 |

## Scheme of Assessment

- |   |  |    |
|---|--|----|
| 4 | Introduction   | 9  |
| 5 | Aims   | 10 |
| 6 | Assessment Objectives                                  | 10 |
| 7 | Scheme of Assessment – <i>Advanced Subsidiary (AS)</i> | 11 |
| 8 | Scheme of Assessment – <i>Advanced Level (AS+A2)</i>   | 12 |

## Subject Content

- |    |                                 |    |
|----|---------------------------------|----|
| 9  | Summary of Subject Content      | 15 |
| 10 | AS Materials and Components     | 17 |
| 11 | AS Design and Market Influences | 19 |
| 12 | AS Processes and Manufacture    | 22 |
| 13 | A2 Materials and Components     | 24 |
| 14 | A2 Design and Market Influences | 26 |
| 15 | A2 Processes and Manufacture    | 28 |

## Key Skills and Other Issues

- |    |   |    |
|----|---|----|
| 16 | Key Skills – Teaching, Developing and Providing Opportunities for Generating Evidence | 30 |
| 17 | Spiritual, Moral, Ethical, Social, Cultural and Other Issues                          | 33 |

## Centre-Assessed Component

- |    |  |    |
|----|--|----|
| 18 | Nature of Centre-Assessed Component            | 34 |
| 19 | Guidance for Setting Centre-Assessed Component | 38 |
| 20 | Assessment Criteria                            | 39 |
| 21 | Supervision and Authentication                 | 52 |
| 22 | Standardisation                                | 53 |
| 23 | Administrative Procedures                      | 54 |
| 24 | Moderation                                     | 55 |

## Awarding and Reporting

- |    |                                 |    |
|----|---------------------------------|----|
| 25 | Grading, Shelf-Life and Re-Sits | 56 |
|----|---------------------------------|----|

## Appendices

- |   |                                     |    |
|---|-------------------------------------|----|
| A | Grade Descriptions                  | 57 |
| B | Unit 2 Candidate Record Form        | 60 |
| C | Unit 5 Candidate Record Form        | 62 |
| D | Product Study Candidate Record Form | 64 |
| E | Centre Declaration Sheet            | 66 |
| F | Overlaps with Other Qualifications  | 67 |

# Background Information

## 1

# Advanced Subsidiary and Advanced Level Specifications

### 1.1 Advanced Subsidiary (AS)

Advanced Subsidiary courses were introduced in September 2000 for the award of the first qualification in August 2001. They may be used in one of two ways:

- as a final qualification, allowing candidates to broaden their studies and to defer decisions about specialism;
- as the first half (50%) of an Advanced Level qualification, which must be completed before an Advanced Level award can be made.

Advanced Subsidiary is designed to provide an appropriate assessment of knowledge, understanding and skills expected of candidates who have completed the first half of a full Advanced Level qualification. The level of demand of the AS examination is that expected of candidates half-way through a full A Level course of study.

### 1.2 Advanced Level (AS+A2)

The Advanced Level examination is in two parts:

- Advanced Subsidiary (AS) – 50% of the total award;
- a second examination, called A2 – 50% of the total award.

Most Advanced Subsidiary and Advanced Level courses are modular. The AS comprises three teaching and learning modules and the A2 comprises a further three teaching and learning modules. Each teaching and learning module is normally assessed through an associated assessment unit. The specification gives details of the relationship between the modules and assessment units.

With the two-part design of Advanced Level courses, centres may devise an assessment schedule to meet their own and candidates' needs. For example:

- assessment units may be taken at stages throughout the course, at the end of each year or at the end of the total course;
- AS may be completed at the end of one year and A2 by the end of the second year;
- AS and A2 may be completed at the end of the same year.

Details of the availability of the assessment units for each specification are provided in Section 3.

2

# Specification at a Glance

## D&T: Food Technology

Advanced Subsidiary Award
5541



AS Examination 5541	
<b>Unit 1</b>	
Written Paper 1½ hours	30% of the total AS marks 15% of the total A Level marks
This paper is based primarily on Materials and Components. Candidates will answer three from four questions.	
<b>Unit 2</b>	
Coursework Approx 40 hours	40% of the total AS marks 20% of the total A Level marks
Either project work and/or a portfolio of coursework which will contain aspects of industrial and commercial practice.	
<b>Unit 3</b>	
Written Paper 1½ hours	30% of the total AS marks 15% of the total A Level marks
All the questions are compulsory and will be based on a theme sent to centres in February for issue to candidates in March. This paper will assess primarily Design and Market Influences.	

+

Advanced Level Award
6541



A2 Examination 6541	
<b>Unit 4</b>	
Coursework approx 20 hours	15% of the total A Level marks
The Product Study will test the ability to analyse, synthesise and draw conclusions from an in-depth study of the designing and making of a product.	
<b>Unit 5</b>	
Coursework approx 50 hours	15% of the total A Level marks
A single, integrated coursework project using any material or combination of materials.	
<b>Unit 6</b>	
Written paper 3 hours	20% of the total A Level marks
This paper contains two questions set on a further study of each of the three sections of the Subject Content. Candidates will be required to answer one question from each section and one other question from any section.	

## 3

## Availability of Assessment Units and Entry Details

### 3.1 Availability of Assessment Units

Examinations based on this specification are available as follows:

	Availability of Units		Availability of Qualification	
	AS	A2	AS	A Level
January	1	—	—	—
June	1, 2 and 3	4, 5 and 6	✓	✓

### 3.2 Sequencing of Units

The nature of Design & Technology requires each unit to be to some extent synoptic, but Unit 5 and Unit 6 particularly include the main synoptic element of the whole A level course which will test candidates' connections between the different elements of Design & Technology: Food. It is recommended that the units are taken in the sequence 1, 2, 3, 4, 5, 6.

### 3.3 Entry Codes

Normal entry requirements apply, but the following information should be noted.

The following unit entry codes should be used:

AS	A2
Unit 1 - FTY1	Unit 4 - FTY4
Unit 2 - FTY2	Unit 5 - FTY5
Unit 3 - FTY3	Unit 6 - FTY6

The **Subject Code** for entry to the AS only award is 5541.

The **Subject Code** for entry to the Advanced Level award is 6541.

### 3.4 Classification Codes

Every specification is assigned to a national classification code indicating the subject area to which it belongs.

Centres should be aware that candidates who enter for more than one GCE qualification with the same classification code, will have only one grade (the highest) counted for the purpose of the School and College Performance Tables.

The classification code for this specification is 9020.

---

### 3.5 Private Candidates

This specification is only available for private candidates where they attend an AQA centre which will supervise and assess the coursework (or other named Unit). Private candidates should write to AQA for a copy of '*Supplementary Guidance for Private Candidates*'.

---

### 3.6 Access Arrangements and Special Consideration

AQA pays due regard to the provisions of the Disability Discrimination Act 1995 in its administration of this specification.

Arrangements may be made to enable candidates with disabilities or other difficulties to access the assessment. An example of an access arrangement is the production of a Braille paper for a candidate with a visual impairment. Special consideration may be requested for candidates whose work has been affected by illness or other exceptional circumstances.

Further details can be found in the Joint Council for Qualifications (JCQ) document:

*Access Arrangements and Special Consideration*

*Regulations and Guidance Relating to Candidates who are Eligible for Adjustments in Examination*

*GCE, AEA, VCE, GCSE, GNVQ, Entry Level & Key Skills*

This document can be viewed via the AQA web site ([www.aqa.org.uk](http://www.aqa.org.uk))

Applications for access arrangements and special consideration should be submitted to AQA by the Examinations Officer at the centre.

---

### 3.7 Language of Examination

All Assessment Units in this subject are provided in English only.

---

# Scheme of Assessment

## 4

## Introduction

This GCE Design & Technology: Food Technology specification complies with:

- the Subject Criteria for Design & Technology
- the GCSE, GCSE in vocational subjects, GCE, VCE, GNVQ and AEA Code of Practice 2006/7
- the GCE Advanced Subsidiary and Advanced Level Qualification – Specific Criteria
- the Arrangements for the Statutory Regulations of External Qualifications in England Wales and Northern Ireland: Common Criteria.

### 4.1 Rationale

The specification has been designed to encourage candidates to take a broad view of technology and design, to develop their capacity to design and make products and to appreciate the complex relations between design, materials, manufacture and marketing.

A section on *Communication Methods* is given in paragraph 11.2 AS *Design in Practice*. Graphics are an integral part of any Design and Technology work. In any Design & Technology course it is important that candidates can communicate their thinking clearly and represent their ideas graphically.

### 4.2 Prior level of attainment

It is helpful but not necessary for candidates to have studied GCSE Design & Technology before commencing work on this specification and no prior knowledge of design and technology is necessary for candidates to undertake a course of study based on this specification.

## 5

### Aims

Design and Technology offers candidates an opportunity to gain personal satisfaction and a positive experience from working with a variety of materials. The practical problem solving processes in this specification will encourage independent learning, creativity and innovation.

Candidates at both AS and A Levels are encouraged to

- a. develop and sustain their own innovation, creativity and design and technology capability, to recognise constraints and to produce high quality products;
- b. develop a critical understanding of the influences of the processes and products of design and technological activity from a historical perspective and in current practice;
- c. apply essential knowledge of understanding and skills of design production processes to a range of technological activities and develop an understanding of industrial practices;
- d. use information and communications technology (ICT) to enhance their design and technological capability.
- e. recognise the social, moral, spiritual and cultural values inherent in design and technological activity, and develop critical evaluation skills in technical, aesthetic, ethical, economic, environmental, social and cultural contexts;
- f. develop as discerning consumers able to make informed choices;
- g. develop positive attitudes of co-operation and citizenship and work collaboratively.

## 6

### Assessment Objectives

Candidates at both AS and A Levels should be able to apply their knowledge and understanding:

---

#### 6.1 Designing

in combination with skills to design products to suitable specifications.

---

#### 6.2 Making

of relevant materials and components, processes and techniques and their skills in using materials, tools and other equipment to produce work to suitable specifications.

### 6.3 Quality of Written Communication

The quality of written communication will be assessed in all assessment units. Candidates will be assessed according to their ability to:

- select and use a form and style of writing appropriate to the purpose and complexity of the subject matter;
- organise relevant information clearly and coherently, using specialist vocabulary when appropriate;
- ensure text is legible, and spelling, grammar and punctuation are accurate, so that meaning is clear.

Centres are reminded that AQA will be offering all its examinations through the medium of English only.

## 7

# Scheme of Assessment - *Advanced Subsidiary (AS)*

The Scheme of Assessment has a modular structure. The Advanced Subsidiary (AS) award comprises three compulsory assessment units.

### 7.1 Assessment Units

Unit 1	Written Paper	1½ hours
<i>30% of the total AS marks</i>	<i>100 marks</i>	

This paper contains four questions based primarily on Materials and Components.

All candidates will be required to answer Question 1 (40 marks). Candidates will then answer **two** of the remaining three questions, each of which is worth 28 marks.

Quality of Written Communication will be assessed in the candidates' written work.

Unit 2	Coursework	approx 40 hours
<i>40% of the total AS marks</i>	<i>80 marks</i>	

Coursework may take a number of forms: a single design-and-make project, two smaller projects and/or a portfolio of work produced during the course which satisfies the coursework requirements.

Quality of Written Communication is to be assessed in the candidates' written work.

Centres must submit their candidates' marks to the AQA by 15 May.

**Unit 3**  
30% of the total AS marks

**Written Paper.**  
100 marks

1½ hours

This paper is based primarily on Design and Market Influences. All the questions will be compulsory and will be based on a theme provided by AQA. The paper will contain two questions, the first (20 marks) which tests knowledge and understanding of the theme and the second (76 marks) which is an extended design question. 4 marks will be allocated to the assessment of the Quality of Written Communication.

Advance information about the theme for the design questions will be circulated to centres in February in the year of the examination for issue to candidates in March to allow candidates to carry out preparatory work. Preparatory work may not be taken in to the examination room.

Centres are strongly recommended to make an early provisional entry to ensure they receive the advance information on time.

## 7.2 Weighting of Assessment Objectives for AS

The approximate relationship between the relative percentage weighting of the Assessment Objectives (AOs) and the overall Scheme of Assessment is shown in the following table:

Assessment Objectives	Unit Weightings (%)			Overall Weighting of AOs (%)
	1	2	3	
Designing	10	20	20	50
Making	20	20	10	50
<b>Overall Weighting of Units (%)</b>	30	40	30	100

Candidates' marks for each assessment unit are scaled to achieve the correct weightings.

# 8

## Scheme of Assessment – *Advanced Level (AS+A2)*

The Scheme of Assessment has a modular structure. The A Level award comprises three compulsory assessment units from the AS Scheme of Assessment and three compulsory assessment units from the A2 scheme of assessment.

## 8.1 AS Assessment Units

Unit 1 15% of the total A Level marks	Written Paper 100 marks	1½ hours
--	----------------------------	----------

Unit 2 20% of the total A Level marks	Coursework 80 marks	approx 40 hours
--	------------------------	-----------------

Unit 3 15% of the total A Level marks	Written Paper 3 100 marks	1½ hours
--	------------------------------	----------

## 8.2 A2 Assessment Units

Unit 4 15% of the total A Level marks	Product Study 50 marks	approx 20 hours
--	---------------------------	-----------------

The Product Study is an in-depth study which will test candidates' ability to research, analyse and communicate their understanding of a particular manufactured product. Examples of possible studies will be provided, but it is expected that many centres will wish to combine the study with work experience or similar opportunities. The study will be assessed by the centre and moderated by AQA. Centres must submit their candidates' marks to the AQA by 15 May.

Quality of Written Communication in the Product Study will be assessed as an integral part of the section titled *Presentation*.

Unit 5 15% of the total A Level marks	Project 105 marks	approx 50 hours
--	----------------------	-----------------

Candidates will be required to submit evidence of a single, substantial designing and making activity. The project should represent approximately 50 hours of supervised time. The project will be assessed by the centre and moderated by AQA. Centres must submit their candidates' marks to the AQA by 15 May.

5 marks will be allocated to the assessment of the Quality of Written Communication in the candidates' written work.

Unit 6 20% of the total A Level marks	Written Paper 100 marks	3 hours
--	----------------------------	---------

The paper will be presented in three sections, one for each section of the Subject Content.

A choice of two questions will be provided in each of the three sections. Candidates must answer one question from each section and one other question from any section.

4 marks will be allocated to the assessment of the Quality of Written Communication in the candidates' written work.

### 8.3 Synoptic Assessment

The Advanced Subsidiary and Advanced Level Criteria state that A Level specifications must include synoptic assessment (representing at least 20% of the total A Level marks).

All Units in Design & Technology are synoptic by nature. However, Units 5 and 6 are particularly appropriate for this assessment and so Unit 5 will contribute 5% and Unit 6, 15%, to the synoptic assessment.

### 8.4 Weighting of Assessment Objectives for A Level

The approximate relationship between the relative percentage weighting of the Assessment Objectives (AOs) and the overall Scheme of Assessment is shown in the following table.

#### A Level Assessment Units (AS + A2)

Assessment Objectives	Unit Weightings (%)						Overall Weighting of AOs (%)
	1	2	3	4	5	6	
Designing	5	10	10	7½	7½	10	50
Making	10	10	5	7½	7½	10	50
Overall Weighting of Units (%)	15	20	15	15	15	20	100

Candidates' marks for each assessment unit are scaled to achieve the correct weightings.

# Subject Content

## 9

## Summary of Subject Content

### 9.1 Requirements

The Subject Content should be studied in depth for the written papers in AS Units 1 and 3 and A2 Unit 6. The content is presented in three sections and, in each section, the AS content is followed by the A2 content.

- A Materials and Components
- B Design and Market Influences
- C Processes and Manufacture.

### 9.2 Presentation of content

The Subject Content defines the knowledge and understanding required for an AS and an A2 course. The sections are not presented as discrete teaching modules because the nature of design and technology requires an holistic approach. The chart below shows the relative contribution of the sections to each of the assessment units.

### 9.3 Relationship of units to content

#### Levels of contribution

Significant = ••

Minor = •

SUBJECT CONTENT	AS			A2		
	Paper Unit 1	CW Unit 2	Paper Unit 3	Product Study Unit 4	Project Unit 5	Paper Unit 6
<b>A. Materials and Components</b>						
Classification of Materials	••	••			••	••
Working Properties	••	••	•	•	••	••
Manipulation and Combining	••	••	•	••	••	••
<b>B. Design and Market Influences</b>						
Development of D&T		••	•	•	••	••
Design in Practice	•	••	•	••	••	••
Design in the Human Context	•	••	••	••	••	••
<b>C. Processes and Manufacture</b>						
Ind and Comm Practice	•	••	•	••	••	••
Product Manufacturing		••	•	••	••	••
Systems & Control	•	••	•	••	••	••

#### 9.4 The nature of Design and Technology

The distinguishing feature of any design and technology course is its practical nature. Knowledge and Understanding is not, therefore, to be acquired purely for its own sake, but in order to *apply* it to the solution of practical problems which arise in everyday life and in industrial and commercial contexts.

Underpinning all learning are the designing and making skills which make use of Knowledge and Understanding in order to produce outcomes which satisfy a design brief.

##### Designing

Designing is a process based activity involving the progressive engagement with a problem which requires thinking, creating, inventing, predicting, experimenting, decision making, constant evaluation and, where necessary, modification. Designers develop an awareness of the opportunities and constraints placed upon them by taking account of the demands of users and producers and of market forces.

The activities detailed above draw upon relevant skills and knowledge which are enriched by the application of human values.

##### Making

The realisation of design ideas and solutions to problems is achieved by making products where a range of materials and media may be used. In design and technology, making activities may take many forms, ranging from early experiments through experimental mock-ups, prototypes, scale models and trials to a final marketable product. All the aspects detailed above provide opportunities for students to develop making skills as they seek to produce high quality outcomes.

##### Communication

Communication is an integral aspect of the whole process and it plays three major roles in any design and technology activity.

First, it enables the designer to visualise ideas and thoughts which permit detailed analysis. Second, it provides a record which can be referred to, adapted or refined as the process progresses. Third, it provides an explanation for others of the development of ideas from the mind to the outcome.

The range of communication methods is wide and becoming wider through the increasing use of ICT. All or any should be used *as appropriate to the task in hand* – notes, sketches, formal drawings, photographs, computer programs, oral communication and two or three dimensional representations are all relevant in particular circumstances.

# Design & Technology: Food Technology

## AS Section A

### *Materials and Components*

Candidates should develop an understanding of food science and the functional properties of the main food components; proteins, fats and carbohydrates – the effect of processing on these foods.

#### 10.1 Classification

Functions and Working Properties – Nutritional, physical and sensory

Macro Nutrients

**Protein** – focus on eggs, milk, cheese and soya  
 Basic understanding of the chemical structure  
 Nutritional properties, including biological values and deficiency  
 Working characteristics – effect of heat, acids, alkalis, mechanical action on the sensory, nutritional and physical characteristics to include denaturation and coagulation

#### **Lipids**

Basic understanding of the chemical structure  
 Nutritional properties  
 Working characteristics – shortening, aeration, emulsification, lubrication, plasticity, medium for cooking

#### **Carbohydrate**

Basic understanding of the chemical structure  
 Nutritional properties  
 Working characteristics

- Starch – effect of heat, gelatinisation; related to cereal products – rice, pasta, flour (baked goods e.g. pastry, cakes, bread and biscuits)
- Sugar – effect of heat, caramelisation, aeration, moisture retention, dextrinisation.
- NSP – functions and importance in the diet, sources – soluble and insoluble.

Micro Nutrients

Focus on vitamins A, B, C and D and minerals: calcium, phosphorus and iron  
 Nutritional properties  
 Sources  
 Effects of food processing on vitamins and minerals to include enzymic browning.

## 10.2 Manipulating and Combining Materials

Manipulation of foods to achieve designated criteria

The use of food additives for sensory, physical and nutritional qualities, colours, colourings, sweeteners, emulsifiers and stabilisers, flavourings.

**It is expected that the three areas listed below will be taught through coursework.**

Selection of materials to match the specification and intended use of the product.

Use of raw materials and the selected use and understanding of standard pre-manufactured components.

Safe use and effect of alternative ingredients used in similar products.

11

# Design & Technology: Food Technology

## AS Section B

### *Design and Market Influences*

Study in this area will develop understanding of the broader perspectives of the food industry. It will encourage the development and analysis of food products with reference to socio-economic, environmental and technological factors.

#### 11.1 Development of Technologies and Design

The opportunity for food product development

Design sources for new products:

product analysis

consumer trends

changes in lifestyle

regional and international influences

world food resources and transportation

new processing techniques

technical developments in storage and heat processing equipment used by consumer.

Role of Research and Development team

Role of research and development team and food technologists in relation to producers and consumers.

#### 11.2 Design in Practice

Product Development

Product life cycles: evolution; introduction; growth, maturity and decline.

Study of existing manufactured food products

Investigate a range of existing products and evaluate against their intended purpose

Analyse the quality of a product to specified criteria and specifications  
Appraisal of aesthetic, function, technical and economic consideration in the design and manufacture of food products

Apply a range of sensory evaluation techniques. Use of qualitative and quantitative tests with statistical and procedural accuracy and against quality standards.

Stages of food product development	Designing stages for manufacture to include: market research; modelling; generation of ideas; concept generation; design specification; product formulation and development; modification and reformulation; test marketing; product launch.
Communication and representation of ideas	The presentation and communication of the work of candidates is an important and integral part of any design based syllabus. The development, manufacture and marketing of products rely upon appropriate communication methods and so candidates are encouraged to develop illustration techniques and experiment with a range of presentation methods. E.g. annotated sketches, working drawings, presentation boards etc.
Design methods	Ways in which designing may be undertaken from the intuitive and informal to those requiring a more systematic approach.  Innovative and creative processes.
Design processes	Processes which may be used in the field of design, illustration techniques, planning for production, methods of communication, data storage and collection, modelling, testing and evaluation to a range of audiences to include clients and potential users.
Health and Safety	Food safety regulations; HACCP as an industry standard for managing and monitoring risk assessment procedures.

---

### 11.3 Communication methods

	The means by which the detail and form of products, environments and systems are communicated so that they may be manufactured.  Identify and use appropriate means to communicate ideas, design proposals and evaluations to a range of audiences, including clients and potential users of the product.
Illustration	Sketching, drawing, selection and use of appropriate 2D and 3D techniques, photography.
Enhancement	Rendering (use of line/tone/colour/form) and texture, to represent materials and surface finishes.
Information Drawing	Quantitative – graphs, pie charts, bar charts, pictograms.  Organisational and topological – flow charts, sequential/schematic
Modelling	Using 3D forms – mockups – prototypes.
Use of ICT	Selection and use of CAD, word processing/DTP, spreadsheets.

## 11.4 Design in the Human Context

Client/Customer Groups	<p>Influence of social and cultural factors on food product development</p> <p>Identify needs of various groups of consumers</p> <p>Analyse market trends, change, adaptability, consumer acceptance</p> <p>Social trends and changes in lifestyle. Regional and international influences</p> <p>Development of nutritional theories and current dietary guidelines e.g. Health of the Nation.</p>
Responsibilities of the manufacturer/designer	<p>Appropriate use of resources and the environmental implications of technological decisions.</p>
Health and Safety	<p>The implications of Health and Safety as an element of design activity. The relevance of food safety with regard to the maker and to the relationship between user and product.</p>
Influence of design and technology in society	<p>Social and economic implications of food production and processing technology including application of nutrition, consumer choice and preference (GM foods and organic foods), nutritional needs, cost, advertising and marketing.</p>

# Design & Technology: Food Technology

## AS Section C

### *Processes and Manufacture*

Candidates should acquire a broad knowledge of the manufacturing systems used to produce a variety of food products suitable for the retail and catering markets.

---

#### 12.1 Industrial and Commercial Practice

Selection and use of equipment to produce a consistent result

Use of mechanical/electrical equipment to produce consistency of outcome, when working to designated tolerances – cutting, shaping, mixing, forming, filling, enrobing.

Determine most effective methodology in terms of quality, effort, skill and energy input.

The beneficial and detrimental effect of micro-organisms and enzymes

Micro-organisms, classification, factors affecting growth. Food spoilage, food risk categories, cross-contamination, food hygiene.

1990 Food Safety Act

Food Hygiene Regulations 1995

European Union Food Hygiene Directive 93/94/EEC.

Preservation Methods

Heat transfer; use of temperature control; canning, drying, freezing.

Extending Shelf Life

Food storage – methods in relation to temperature control: low temperatures – chilling.

Controlled and modified atmospheric packaging, vacuum packaging.

---

#### 12.2 Product Manufacturing

Industrial Processes

Matching the material/process to the scale of production intended for the industrial product/system e.g. one-off, customised, batch, continuous flow, mass production. Sourcing, procurement, preparing, making, handling, packaging.

Packaging	Function of food packaging: containing, protection and identification. Materials: types and properties of packaging to ensure quality control. Selection and combination of packaging materials. Environmental issues of packaging.
Food Labelling	The role of food product labelling. Legal requirements. 'Food Labelling Regulations 1996'. 'Weights and Measures Act 1985 and amendments'. Manufacturer's information.
Health and Safety	Safety Control Systems: HACCP, in food production systems, storage and distribution resource management, other labelling information, nutritional labelling, food intolerance, allergies.

---

### 12.3 Systems and Control

Quality Assurance and Quality Control	Role and function of systems in food manufacture, e.g. major quality standards: ISO 9001/2. Prepare and plan an appropriate system to produce a product. Use of systems diagrams and schematic layouts indicating human and electronic feedback with industry. Microbial Risk Assessment. Difference between open and closed systems and their importance in achieving control.
---------------------------------------	---

# Design & Technology: Food Technology

## A2 Section A

### *Materials and Components*

Develop further the understanding of the application of food science with greater emphasis on food chemistry.

#### 13.1 Classification

Functions and Working Properties. Nutritional (including DRVs), physical, chemical, sensory.

Macro Nutrients

**Protein** – focus on meat, fish and vegetarian alternatives other than soya

Detailed understanding of the chemical structure to include amino acids and how they link together to form polypeptide chains (general formula)

Deeper understanding of the working characteristics

#### **Lipids**

Detailed understanding of the chemical structure to include the general formula for fatty acids and the structure of triglycerides

Deeper understanding of the working characteristics to include the effect of the combination of saturated and unsaturated fatty acids on the working characteristics of fats.

Effect of fat structure on the nutritional properties of foods e.g. hydrogenation

Rancidity and oxidative rancidity

#### **Carbohydrates**

Detailed understanding of the chemical structure to include monosaccharides, disaccharides and polysaccharides (general formula)

Deeper understanding of the working characteristics to include:

starch – factors affecting the consistency of gels: ratio, acids,

sugar – relate to sauces, modified starch, sugar, sugar substitutes and sweeteners as additives

Micro Nutrients

Focus on vitamins A, B, C and D and minerals: calcium, phosphorus and iron

Nutritional properties of micro nutrients in relation to specific diets and dietary products

DRVs

Functional foods and the nutritional profile of food products.

### 13.2 Manipulating and Combining Materials

Application and interaction of food materials, components and processing in product development

Functions of colloid systems in food products: emulsions, foams, suspensions, sols and gels

Types of food additives and their working properties e.g. preservatives, sweeteners, emulsifiers and stabilisers, flavouring and flavour enhancers, antioxidants, anti-caking agents, anti-foaming agents, acids, bases and buffers

Non-enzymic browning (maillard reaction)

**It is expected that the area given below will be taught through coursework.**

Scaling up for production and the effect on designated criteria.

# Design & Technology: Food Technology

## A2 Section B

### *Design and Market Influences*

Develop further understanding of trends in new product development.

---

#### 14.1 Development of Technologies and Design

The opportunity for food product development

Design sources for new products; the increasing range of food materials; new novel foods (functional foods) e.g. genetic engineering; consumer trends e.g. ethnic foods, snack foods; 'healthy eating', ambient meals, cook-chill, life stage products.

---

#### 14.2 Design in Practice

Product Development

Market Research to gather information used to identify possible market or product success: client profiling, target markets.

Study of existing manufactured food products

Set up and carry out rigorous test procedures on existing products to analyse, evaluate and develop ideas and design criteria.

Stages of food product development

Designing for manufacture to include: concept development; concept screening; commercial liability; in-depth research, investigation and evaluation. Prototypes, test production runs, product launch, future developments.

Cost calculation: cost of raw materials, packaging, manufacture, cost price, retail price.

Copyright protection

The role of patenting and its importance to the designer and manufacturer.

Information Technology

Use of CAD/CAM. Application and the potential for design and manufacture.

---

### 14.3 Design in the Human Context

Marketing and Communication

Different types of retailing outlets; marketing and product promotion.

Health and Safety

To link industrial quality control systems with the physical, chemical and biological methods of extending the shelf life of food products.

Influence of design and technology in society

The viability and application of alternative sources of energy.

An awareness of environmental issues e.g. packaging and packaging materials, agricultural/horticultural issues e.g. factory farming, growth promoters.

15

# Design & Technology: Food Technology

## A2 Section C

### *Processes and Manufacture*

Develop further understanding of the microbiological – and quality control aspects of industrial food production.

---

#### 15.1 Industrial and Commercial Practice

Selection and use of equipment to produce a consistent result

Relate to industrial application for uniformity, fine finish, waste reduction, standardised methods of production.

The beneficial and detrimental effect of micro-organisms and enzymes

Role of micro-organisms and enzymes in the manufacture of food products: yoghurt, cheese, quorn.

Food Spoilage – types of food poisoning; causes and symptoms. Microbiological risk assessment and risk management.

Enzymic browning

Oxidation, rancidity

Effects of temperature on the aesthetic, sensory, physical and nutritional quality of food

Effect of chilling and freezing on different foods and food products.

Preservation Methods

High temperatures: pasturisation, sterilisation, U.H.T.

Extending Shelf-Life

Physical, biological and chemical treatments, e.g. drying, removal of moisture; chemicals (sugar, acid, salt); curing; smoking; fermentation; irradiation: MAP (Modified Atmospheric Packaging).

---

#### 15.2 Product Manufacturing

Industrial Processes

Role of units: research and development, test kitchen, pilot plant, laboratory.

Manufacturing plant and distribution systems.

Production systems: just-in-time.

The availability of materials, equipment and processes to alter or determine the end product.

---

Cost of energy and energy efficiency in the production and manufacture of foods products.

Social and economic implications.

Understand the application of new developments in technology to the food industries.

Additives affecting stability; emulsifiers; stabilisers; acids, bases and buffers; anti-caking agents; anti-foaming agents anti-oxidants.

---

### 15.3 Systems and Control

#### Quality Assurance and Quality Control

Analysis and design of a commercial food production system to include critical path analysis as an aid to designing a food production system.

Risk assessment applied to risk category foods: procedures for different contexts and scales of production.

Quality control standards. Working to tolerances which define and control quality standards.

Hygiene standards.

Application of appropriate screening and checking procedures in order to monitor performance.

The use of ICT for stock control, ordering, production schedules, production analysis, traceability.

Assured safe catering.

## Key Skills and Other Issues

16

# Key Skills – Teaching, Developing and Providing Opportunities for Generating Evidence

### 16.1 Introduction

The Key Skills Qualification requires candidates to demonstrate levels of achievement in the Key Skills of *Application of Number, Communication and Information Technology*.

The units for the ‘wider’ Key Skills of *Improving own Learning and Performance, Working with Others* and *Problem-Solving* are also available. The acquisition and demonstration of ability in these ‘wider’ Key Skills is deemed highly desirable for all candidates, but they do not form part of the Key Skills Qualification. Design and Technology, however, does offer unique opportunities for centres to incorporate all Key Skills in their teaching.

Copies of the Key Skills Units may be downloaded from the QCA web site (<http://www.qca.org.uk>).

The units for each Key Skill comprise three sections:

- A What you need to know.
- B What you must do.
- C Guidance.

Candidates following a course of study based on this specification for Design and Technology: Food Technology can be offered opportunities to develop and generate evidence of attainment in aspects of all Key Skills. Areas of study and learning that can be used to encourage the acquisition and use of Key Skills, and to provide opportunities to generate evidence for Part B of the units, are signposted below. More specific guidance on integrating the delivery of Key Skills in courses based upon this specification is given in the AQA specification support material.

### 16.2 Key Skills Opportunities in Design and Technology: Food Technology

The broad and multi-disciplinary nature of Design and Technology, that calls upon candidates’ abilities to demonstrate the transferability of their knowledge, understanding and skills, makes it an ideal vehicle to assist candidates to develop their knowledge and understanding of the Key Skills and to produce evidence of their application. The matrices below signpost the opportunities for the acquisition, development and production of evidence for Part B of each of the Key Skills units at *Level 3*, in the teaching and learning modules of this specification. The degree of opportunity in any one module will depend upon a number of centre-specific factors, including teaching strategies and level of resources.

## Communication

What you must do	Signposting of Opportunities for Generating Evidence in Teaching Modules					
	1	2	3	4	5	6
<b>C3.1a</b> Contribute to discussions	✓	✓	✓	✓	✓	✓
<b>C3.1b</b> Make a presentation	✓	✓	✓	✓	✓	✓
<b>C3.2</b> Read and synthesise information	✓	✓	✓	✓	✓	✓
<b>C3.3</b> Write different types of documents	✓	✓	✓	✓	✓	✓

## Application of Number

What you must do	Signposting of Opportunities for Generating Evidence In Teaching Modules					
	1	2	3	4	5	6
<b>N3.1</b> Plan and interpret Information from different sources	✓	✓	✓	✓	✓	✓
<b>N3.2</b> Carry out multi-stage calculations	✓	✓	✓	✓	✓	✓
<b>N3.3</b> Present findings, explain results and justify choice of methods	✓	✓	✓	✓	✓	✓

## Information Technology

What you must do	Signposting of Opportunities for Generating Evidence in Teaching Modules					
	1	2	3	4	5	6
<b>IT3.1</b> Plan and use different sources to for and select information	✓	✓	✓	✓	✓	✓
<b>IT3.2</b> Explore, develop and information, and derive new information	✓	✓	✓	✓	✓	✓
<b>IT3.3</b> Present information including text, numbers and images	✓	✓	✓	✓	✓	✓

Working with Others

What you must do	Signposting of Opportunities for Generating Evidence in Teaching Modules					
	1	2	3	4	5	6
WO3.1 Plan the activity	✓	✓	✓	✓	✓	✓
WO3.2 Work towards agreed objectives	✓	✓	✓	✓	✓	✓
WO3.3 Review the activity	✓	✓	✓	✓	✓	✓

Improving own Learning and Performance

What you must do	Signposting of Opportunities for Generating Evidence in Teaching Modules					
	1	2	3	4	5	6
LP3.1 Agree and plan targets	✓	✓	✓	✓	✓	✓
LP3.2 Seek feedback and support	✓	✓	✓	✓	✓	✓
LP3.3 Review progress	✓	✓	✓	✓	✓	✓

Problem Solving

What you must do	Signposting of Opportunities for Generating Evidence in Teaching Modules					
	1	2	3	4	5	6
PS3.1 Recognise, explain and describe the problem	✓	✓	✓	✓	✓	✓
PS3.2 Generate and compare different ways of solving problems	✓	✓	✓	✓	✓	✓
PS3.3 Plan and implement options	✓	✓	✓	✓	✓	✓
PS3.4 Agree and review approaches to tackling problems	✓	✓	✓	✓	✓	✓

**NB.** The signposting in the six tables above, represents opportunities to acquire and produce evidence of the Key Skills which are possible through this specification. There may be other opportunities to achieve these and other aspects of Key Skills via this specification, but such opportunities are dependent on the detailed course of study delivered within centres.

**16.3 Key Skills in the Assessment of Design and Technology: Food Technology**

The ‘main’ Key Skill of Communication must contribute to the assessment of Design and Technology: Food Technology at AS and A Level. Aspects of Communication are an intrinsic part of Assessment Objective 1 and hence will form part of the assessment requirements for Units 1, 3 and 6.

All Key Skills pervade any Design and Technology course. They will therefore contribute to the quality of all work submitted for assessment and provide evidence for Key Skills assessment.

---

**16.4 Further Guidance**

More specific guidance and examples of tasks that can provide evidence of one or more Key Skill are given in the AQA specification support material.

---

**17**

## Spiritual, Moral, Ethical, Social, Cultural and Other Issues

---

**17.1 Spiritual, Moral, Ethical, Social and Cultural Issues**

The study of design and technology should contribute substantially to candidates' understanding of moral, ethical, social and cultural issues. Such issues underlie all design and manufacturing activities and are explicitly referred to in Sections B and C of the Subject Content. Testing may occur in any unit and will specifically appear in coursework assessment.

---

**17.2 European Dimension**

AQA has taken account of the 1988 Resolution of the Council of the European Community in preparing this specification and associated specimen papers.

---

**17.3 Environmental Education**

AQA has taken account of the 1988 Resolution of the Council of the European Community and the Report "*Environmental Responsibility: An Agenda for Further and Higher Education*" 1993 in preparing this specification and associated specimen papers. Environmental considerations are important to the development of all designs and products. Awareness of these issues is specifically required in all sections of the Subject Content and will be tested in all Assessment Units. See para 19.2 D for details of coursework requirements.

---

**17.4 Health and Safety**

Health and safety impinges on all aspects of Design and Technology and requires consideration in terms of the maker, the manufacturer, the individual user and society at large. Health and Safety and related issues are expected therefore to be an integral part of all teaching. They will form part of the assessment criteria for all coursework units and may also be tested in any externally assessed unit.

---

**17.5 Avoidance of Bias**

AQA has taken great care in the preparation of this specification and associated specimen papers to avoid bias of any kind.

# Centre-Assessed Component

18

## Nature of Centre-Assessed Component

Unit 2 is the coursework unit for the AS specification and Units 4 and 5 are the coursework units for A2. Each has a different character and purpose, but all are concerned with the design and realisation of products using a range of manufacturing methods and a strong awareness of market influences. Collectively, the coursework units account for 50% of the A Level scheme of assessment.

The use of ICT in the presentation of coursework is expected and encouraged. Design and Technology is also a particularly appropriate subject for demonstrating broader ICT skills such as CAD/CAM and the wide range of other ICT applications referred to in the Subject Content. All of these will receive appropriate credit where they are used.

Coursework also provides ample opportunities to provide evidence for all six Key Skills. *Working with Others*, for example, can involve “designing, making and presenting a product for a customer or client”. (Candidates should be aware, however, that the work they present for assessment must be their own.)

### 18.1 Unit 2 AS Coursework

Centres may produce coursework in a variety of ways for this unit. A single project, two smaller projects or a portfolio of work which satisfies the coursework requirements, are all acceptable approaches. Some centres may also wish to present a minor project supplemented by a portfolio of work. Whichever approach is adopted, the work should be presented on A4 or A3 paper and should represent approximately 40 hours of supervised time and candidates will be required to provide evidence of:

#### AS

Assessment Criteria	Designing	Making	Total
1 Investigation and clarification of problem	7	-	7
2 Development of design proposal	16	7	23
3 Communication and modelling	7½	3½	11
4 Making and manufacturing	-	23	23
5 Evaluation and testing	7	4	11
Total Marks	37½	37½	75

Coursework must be completed and marked in time for marks to be submitted to the AQA by 15 May in the year of examination.

## 18.2 A2 Unit 4 Product study

Candidates are required to submit an in-depth product study for assessment of approximately 2000 words presented on A4 paper. The study is expected to take approximately 20 hours of supervised time. The study will be marked by the centre and moderated by an AQA moderator. Examples of possible studies will be provided, but it is expected that many centres will wish to produce their own titles in order to combine the study with work experience or similar opportunities. Candidates should select areas of study which are of interest and value to them, in consultation with their teacher.

The work should be school-based and should also involve the appropriate liaisons with professional designers, industry and commerce where possible.

The study may be based on the development and manufacture of either a single product or a group of products together with all the processes involved. It should be noted that designing and manufacturing knowledge and understanding will be assessed in equal measure.

The study must be based on a proposition that can be explored and from which conclusions can be drawn and evaluated. The study is not to be seen as simply a historical survey or an account of all the material gathered, but as a demanding intellectual investigation that allows a candidate to develop their critical analytical faculties, learn from the work of existing designers and technologists and thus become influential regarding their own design and technological activity.

The study should allow a candidate to gain a critical understanding of the influences and effects of processes, products and design and technological activity. In addition, it should allow a candidate to demonstrate a recognition of the social, spiritual, moral and cultural values inherent in design and technological activities, together with developing critical evaluation skills in one or more of the following contexts: technical, aesthetic, economic, environmental, social and cultural. Moreover, it should provide an opportunity to develop an understanding of design production processes and industrial practices whilst examining the moral and ethical issues associated with manufacturing the product.

## 18.3 Examples of possible types of topics

- a A study of the flow of materials or the technological processes underpinning the flow through a manufacturing company from the raw material, its processing and output to packaging for sale, together with identifying areas for improvement.
- b A study of the development of a product, together with the reasons for changes to its design and manufacture and the success or otherwise of those changes.
- c A study of the influences a particular designer or group of designers has had on the development of a product and its manufacture or the processes supporting its manufacture and their implications, together with evaluating the impact their work has had, within a specified context, on the world of design.

#### 18.4 Presentation

Before selecting a topic for the product study, it is essential that candidates study the assessment criteria for this module and the guidance notes

The vehicle for communicating understanding and the method of presentation will vary depending upon the media area and the type of study being undertaken. It is expected, however, that a variety of communication methods will be used wherever they are appropriate. The design and presentation of the work is clearly of importance and should allow the teacher to access easily the information and apply the assessment criteria when marking the study.

#### 18.5 The Structure

The study should proceed through the following broad stages:

- 1 Identifying the topic in such a way that the purpose of the investigation and the desired outcome are clear.
- 2 Deciding how the investigation will be conducted, what data/information will be used and what methods will be used to collect it.
- 3 Carrying out the plan of action, making justified changes as and when the need arises.
- 4 Analysing the data/information gathered, drawing conclusions and where appropriate making recommendations.
- 5 Presenting the work effectively and clearly to the reader with regard to the tasks undertaken, the thinking that took place and the results that were achieved within the chosen context.

#### 18.6 A2 Unit 5 Project

Candidates are required to submit a single, substantial project for assessment. The project should consist of a design folder presented on A4 or A3 paper and the associated outcome(s), and should represent approximately 50 hours of supervised time.

Candidates will be required to provide evidence of:

##### A2

Assessment Criteria	Designing	Making	Total
1 Investigation and clarification of problem	10	-	10
2 Development of design proposal	20	10	30
3 Communication and modelling	10	5	15
4 Making and manufacturing	-	30	30
5 Evaluation and testing	10	5	15
Total Marks	50	50	100

Coursework must be completed and marked in time for marks to be submitted to the AQA by 15 May in the year of examination.

Although the AS and the A2 mark schemes are identical (see para 18), the top band of marks is reserved for A2 candidates. Candidates working at Advanced Level are also expected to take increased responsibility for the management of their major project. At this level, no set brief or task should be given to allow appropriate work to be identified by the candidates themselves, guided by their teachers.

Candidates may respond to or adapt exemplar tasks provided in the exemplar materials, or devise their own using the guidelines given in para 19.2.

A Level design and technology involves increased emphasis on the industrial and commercial aspects of designing and making, an increased awareness of a wider range of users such as clients, manufacturers and the potential end user and an increased sensitivity to the wider effects of their work on society and the environment.

## Guidance for Setting Centre-Assessed Component

### 19.1 Guidelines on Producing AS Portfolio Work

It is anticipated that teachers adopting the portfolio approach for AS coursework will wish to integrate assignments for assessment with their teaching. It is possible to produce five entirely separate assignments to match each of the five criteria (see para 20). It is equally possible that setting too many small assignments will fragment the process of designing. This would be highly artificial and unlikely to produce genuine design and technology work. It would be more appropriate to create realistic assignments which combine two or three criteria; for example, investigating a problem and developing a solution could be seen as a discrete activity. Communication and evaluation are likely to feature in any work produced and so it is a relatively simple matter to select the appropriate evidence to demonstrate the candidate's best achievements.

Where evidence for one criterion features in more than one piece of work, it is the teacher's responsibility to identify on the back of the Candidate Record Form where the best work is to be found. This will help to ensure moderators assess what teachers have selected for assessment.

### 19.2 Guidelines on the Writing of Project Outlines

A2 project outlines are given in the Exemplar Material. Candidates may use these or adapt them to their needs and the facilities and resources available. They may also use these outlines for an AS project but due consideration must be given to the different times available. It is expected that teachers will ensure each candidate has time to complete a quality project commensurate with his/her ability.

Candidates developing their own outlines should take note of the following guidelines. These are given here to help teachers ensure that the project outlines they approve will meet the needs of candidates, the requirements of the specification and the available resources. Teachers unsure of the appropriateness of a particular candidate's outlines may submit them to their Coursework Adviser for further advice.

- A** Does the outline encourage an integrated approach to designing and making and the application of knowledge?
- B** Has the candidate so written the context or problem that he/she will be able to demonstrate the highest level of his/her ability in each assessment criterion?

- C Where a single, broad context, e.g. design and make an educational toy, is to be given to the teaching group, has each candidate produced a brief for him/herself that will be individual, challenging and sufficiently detailed?
- D Does the project outline require the candidate to consider:
- systems and control
  - materials and components
  - provision for product maintenance where appropriate (e.g. remedial work, wash care labelling)
  - the effects and implications of technological activity (e.g. industrial, commercial, social, moral, economic, environmental factors)
  - repetition skills (e.g. multiple production)
  - use of CAD/CAM and ICT skills
  - design, manufacturing and product quality
  - health and safety in relation to the maker and others?

Account will be taken of the above during assessment as appropriate.

- E Are the physical and human resources available for the potential demands of the project?
- F Can the project be completed satisfactorily in the time available?
- G Will the task permit sufficient supervision to enable the teacher to certify that the candidate's work is his/her own?

## 20

## Assessment Criteria

### 20.1 Introduction

The Assessment Criteria for AS and A2 Coursework are given below and this is followed by the criteria for the Product Study. AQA will provide exemplar material and detailed guidance to illustrate the standard of work required for each coursework unit.

The Assessment Criteria for AS and A2 coursework are common except that the top level for each criterion, printed in *italic*, is available only for A2 candidates. AS candidates' work will be marked out of a total of 75 marks and A2 candidates' work out of 100 marks.

Five criteria are produced for assessment and each criterion has five bands of marks. Each band should be viewed holistically when making assessments; a weakness in one element of a level, for example, can be balanced by strengths in another. Candidates who produce no work for a criterion, or who produce work below AS or A Level standard, should be awarded a mark of zero.

An assessment out of 5 marks for *Quality of Written Communication* (QWC) is also to be made for each of Units 2 and 5. See paragraph 20.3 for full details.

This makes the total possible mark for Unit 2 80 marks and for Unit 5 105 marks. QWC for the Product Study is an integral part of the *Presentation* section of the Assessment Criterion and therefore separate marks have not been allocated.

All coursework needs to be completed and collected in sufficient time for teachers to mark and submit marks by 15 May. It is recommended that formative assessments are made during its production to provide candidates with feedback on their progress and to ease the marking load at the end of the course. It will be necessary, however, to re-assess work at the end of the coursework period to ensure any additional work receives due credit.

---

## 20.2 AS and A2 Project Coursework Assessment Criteria

The assessment of coursework is divided into 50% Designing and 50% Making. For the five Assessment Criteria which follow, each statement has been clearly identified to show whether it is:

1. (a) (i) Primarily Designing (D)  
(ii) Primarily Making (M)

It should be understood, however, that evidence of Designing or Making can be produced under most criteria, although the letters D and M do indicate where the main thrust is likely to be.

OR

- (b) A mixture of both (D/M).

Evidence of both may be produced under criteria marked D/M.

2. Two sets of criteria are not annotated because *Investigation and Clarification of Problems* is exclusively Designing, and *Making/Manufacturing* is exclusively Making.
3. The italicised text for section (a) under each heading applies only to A2 assessments.

**1. Investigation and Clarification of Problems****(AS = 7 marks  
A2 = 10 marks)**

- 8-10**                      **(a)** • *Identifies and collects a comprehensive range of primary and secondary information which is well organised and takes into account market needs/ trends/ demands.*
- *Perceptive analysis of information.*
  - *Design objective clearly and independently identified.*
  - *Comprehensive, well reasoned and explained specifications taking full account of the research information collected.*
- 6-7**                      **(b)** • Identifies and collects a good range of primary and secondary information which has been organised carefully, and takes into account market/ user needs and demands.
- Good analysis of information.
  - Design objective is quite clearly stated and attempts to respond to the information collected.
  - Specifications cover the main points and are well explained, taking into account the research information gathered.
- 4-5**                      **(c)** • Identifies and collects a useful range of primary and secondary information which shows some reasonable organisation and some awareness of market needs.
- Some analysis of information collected.
  - Prepares a design objective but may need occasional advice.
  - Specification lists most of the main points with some explanation.
- 2-3**                      **(d)** • Collects some primary and secondary information which shows some organisation, analysis and awareness of market needs.
- Reacts to suggestions and begins to formulate a design objective.
  - Specification identifies a reasonable range of points with one or two showing a little explanation.
- 0-1**                      **(e)** • Collects basic information from a very limited range of sources and shows a little awareness of market needs.
- Considerable help needed to formulate a design objective.
  - Specification identifies a few obvious points which are simplistically stated.

## 2. Development of a Design

### Proposal

(AS = 23 marks

A2 = 30 marks)

24–30

- (a)
- *Comprehensive and imaginative range of feasible ideas and/ or approaches which show flair and ingenuity. (D/M)*
  - *A sophisticated/ elegant solution which satisfies all of the requirements. (D)*
  - *Clear and full explanation of all decisions taken. (D)*
  - *Explores different proportions, material combinations, technologies and methods of production. (M)*

18–23

- (b)
- Varied range of imaginative and feasible ideas. (D/M)
  - Imagination/originality clearly evident. (D)
  - Good development of initial idea(s) or approach. (D/M)
  - Shows ability to discriminate. (D)
  - Clear and well reasoned explanations showing the details considered in arriving at a preferred solution. (D)
  - Experimented with a range of different materials and constructions. (M)

12–17

- (c)
- Adequate range of feasible ideas with some variety of approach/principle. (D/M)
  - Some imagination and/ or originality evident. (D)
  - Adequate development of initial idea(s) which improves the chances of success of the finished product. (D/M)
  - Some feasible solutions indicated with some sound explanation evident. (D)
  - Some willingness shown to experiment with a limited range of materials and constructions. (M)

6–11

- (d)
- Limited range of feasible ideas. (D/M)
  - Suggestions/approaches are largely predictable and lack originality. (D)
  - Some elementary development of an idea. (D)
  - Some explanation evident in at least one area. (M)

0–5

- (e)
- Initial thoughts/suggestions are simple variations of one idea or approach and lack originality. (D/M)
  - Some minor changes made to an initial idea which improve minor aspects. (D)
  - Explanation evident but simplistic. (D)
  - Drawing of a chosen idea has few details of constructions given. No use of mock-ups. (M)

**3. Communication and Modelling****(AS = 11 marks****A2 = 15 marks)****12-15**

- (a)**
- *High level of presentation, modelling and communication skills, showing sensitivity and a high degree of accuracy. (D/M)*
  - *Wide range of appropriate materials, techniques and media used to convey all details necessary for third party manufacture to proceed smoothly at every stage. (M)*
  - *Provides clear and articulate verbal explanation about all aspects of the work. (D)*

**9-11**

- (b)**
- *Very good level of presentation, communication and modelling skills. (D/M)*
  - *Broad range of appropriate materials, techniques and media used to convey how the manufacturing process will proceed effectively at all stages. (M)*
  - *Can clearly explain work to others through discussion. (D)*

**6-8**

- (c)**
- *Good level of presentation, communication and modelling skills. (D/M)*
  - *Sufficient information is given, using a range of appropriate materials, techniques and media, so that own making/production can proceed. (M)*
  - *Able to talk through ideas with others. (D)*

**3-5**

- (d)**
- *Sound level of presentation, communication and modelling skills. (D/M)*
  - *Adequate information, using correct materials, techniques and media provided so that making/ production/prototyping can be started. (M)*
  - *With encouragement, can discuss ideas with others. (D)*

**0-2**

- (e)**
- *Evidence of presentation, communication and modelling skills at a basic level. (D/M)*
  - *Some of the information necessary to make the product included. (M)*
  - *Little attempt to communicate a logical approach to the problem. (D)*
  - *Limited ability to talk to others about the work. (D)*

#### 4. Making/Manufacturing

(AS = 23 marks

A2 = 30 marks)

24–30

- (a)
- *Comprehensive and detailed plan for all stages of designing and making.*
  - *Able to adapt the work schedule in the light of changing circumstances and ongoing developments whilst still meeting realistic deadlines.*
  - *High level of making skills using materials, components and media.*
  - *Ability to adapt original design, where appropriate, whilst still working with precision and accuracy.*
  - *Detailed quality assurance and quality control checks built into the manufacturing process to ensure consistency when items are manufactured in quantity, demonstrating a very clear understanding and application of commercial and/or industrial practices.*

18–23

- (b)
- A very detailed plan which identifies sequence of activities to be followed in both designing and making in order to achieve a high quality outcome.
  - Detailed time schedule for each stage of designing and manufacture given.
  - Evidence to show how the method of manufacture may need to vary.
  - Very good level of making skills using materials, media and components at a well above average level of accuracy.
  - Evidence of modifications, where appropriate, during manufacture to improve the original design and ensure a good quality outcome.
  - Quality assurance and quality control checks built into the manufacturing process.
  - Demonstrates a clear understanding and application of commercial and/or industrial practices.

12–17

- (c)
- Good step by step plan that identifies the essential stages of designing and making.
  - Predicted time schedule given.
  - Comprehensive list of the tools, materials and processes to be used.
  - Good level of making skills using materials, components and media at an above average level of accuracy.
  - Competent use of tools and equipment to minimise waste.
  - Outcome is of acceptable quality and accuracy.
  - Able to adapt methods of manufacture to changing circumstances, showing some understanding and application of commercial and/or industrial practices.

- 6-11 (d) • Step by step plan identifying essential stages of designing and making.
- Tools, materials and process to be used listed.
  - Adequate level of skill using materials, components and media with some confidence.
  - Clear evidence of quality and accuracy in some aspects of the work.
  - Evidence of the ability to overcome problems to achieve a successful outcome.
  - Evidence of industrial and/or commercial practices is slight.
- 0-5 (e) • Elementary plan for the main stages of designing and making.
- Some tools/equipment and materials/ingredients/components listed.
  - Some ability to manipulate materials, components and media using a range of basic techniques.
  - Work shows some evidence of quality and accuracy.
  - Some attention paid to the quality of the finished product.
  - Functional and aesthetic characteristics of the finished product considered.

## 5. Evaluation and Testing

(AS = 11 marks

A2 = 15 marks)

- 12-15 (a) • *Highly detailed and comprehensive testing strategy used to make perceptive and critical comments that go beyond the original specification. (D/M)*
- *Such comments used to suggest ways to improve product. (D/M)*
  - *Very detailed judgements made throughout designing process based on personal and expert opinion. (D)*
  - *Views of consumers and others used to develop and refine the product. (D)*
  - *Detailed and perceptive judgements related to commercial and/or industrial practices. (D/M)*
- 9-11 (b) • Detailed and appropriate testing strategy employed from which critical judgements made on ways to improve product based on original specification. (D/M)
- Detailed evaluation comments made at appropriate stages throughout the designing process. (D)
  - Other people's views canvassed in depth at various points throughout the designing process. (D)
  - Detailed evaluative judgements related to commercial and/or industrial practice. (D/M)

- |     |  |
|-----|--|
| 6-8 | <p><b>(c)</b></p> <ul style="list-style-type: none"><li>• From a structured testing procedure, conclusions are drawn of ways to improve product. (D/M)</li><li>• Other people's opinions taken into account throughout the folio. (D)</li><li>• Important criteria used to comment on the design process throughout the folio. (D)</li><li>• Initial specification is clearly used to comment on the final outcome. (D)</li><li>• Good evaluative judgements relating to commercial and/or industrial practices. (D/M)</li></ul> |
| 3-5 | <p><b>(d)</b></p> <ul style="list-style-type: none"><li>• Limited conclusions drawn from a simple testing strategy. (D/M)</li><li>• Formative and summative evaluation comments throughout the folio based on minor criteria. (D)</li><li>• Some evaluation relating to industrial and/or commercial practices. (DM)</li></ul>   |
| 0-2 | <p><b>(e)</b></p> <ul style="list-style-type: none"><li>• Elementary testing used. (D/M)</li><li>• Formative and summative comments are largely descriptive and predictable and based on personal opinion. (D)</li><li>• Only limited evaluation related to commercial/ industrial practices. (D/M)</li></ul>  |

### 20.3 Quality of Written Communication (QWC)

When the coursework for Unit 2 or Unit 5 is complete, an assessment of QWC out of 5 marks should be made and recorded on the Candidate Record Form. The total maximum marks are therefore 80 for Unit 2 and 105 for Unit 5.

The assessment of the candidate's ability should be determined across the submitted coursework as a whole using the criteria given below. Award zero only where the quality falls below the lowest criterion.

#### Marks

- 5 The candidate will express complex ideas extremely clearly and fluently. Sentences and paragraphs will follow on from one another smoothly and logically. Arguments will be consistently relevant and well structured. There will be few, if any, errors of grammar, punctuation and spelling.
- 3-4 The candidate will express moderately complex ideas clearly and reasonably fluently, through well-linked sentences and paragraphs. Arguments will be generally relevant and well structured. There may be occasional errors of grammar, punctuation and spelling.
- 2 The candidate will express straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well connected. Arguments may sometimes stray from the point or be weakly presented. There may be some errors of grammar, punctuation and spelling, but not such as to suggest a weakness in these areas.
- 1 The candidate will express simple ideas clearly, but may be imprecise and awkward in dealing with complex or subtle concepts. Arguments may be of doubtful relevance or obscurely presented. Errors in grammar, punctuation and spelling may be noticeable and intrusive, suggesting weaknesses in these areas.

### 20.4 Product Study Criteria

As with AS and A2 coursework, it is recommended that the Product Study is assessed as work progresses.

Marks will be allocated to the five aspects of the Product Study detailed below. A greater weight is given to *Analysis and Synthesis* and *Conclusions, Evaluations and Recommendations* as they represent the most demanding aspects of the Product Study.

The study will be marked out of a total of 50 marks.

**25 marks are allocated for the understanding of designing issues and**

**25 marks are allocated for the understanding of manufacturing issues.**

**1. Product Study Objectives and Context (5 marks)**

- a. The context within which the study is set.
- b. The nature of the activity.
- c. What the candidate set out to achieve by undertaking the study.

**2. The Plan of Action and its Execution (5 marks)**

- a. What data were required to allow the study to be undertaken.
- b. How the data were collected and collated.
- c. The proposed action plan and its relationship to the stated objectives.
- d. What happened when the work was carried out, together with, if necessary, an explanation of how and why the plan was changed.

**3. Analysis and Synthesis (20 marks)**

- a. The relevance of the actual information presented.
- b. The quality of the analysis of the information.
- c. The quality of synthesis leading to conclusions being drawn.

**4. Conclusions, Evaluations and Recommendations (15 marks)**

- a. The accuracy of the Conclusions, Evaluations and Recommendations made given the nature of the Product Study.
- b. The quality of the Conclusions, Evaluations and Recommendations made from the investigation.
- c. The ways in which the study could be extended.

**5. Presentation (5 marks)**

It is recognised that the work will be presented in a variety of ways using various techniques that will be dependent upon the nature of the Product Study. There should however be evidence of:

- a. Clear and logical presentation that allows easy access to the information.
- b. Appropriate presentation techniques being employed.
- c. The use of a variety of techniques including the use of ICT.

## 20.5 Assessment Criteria for the Product Study

### 1. Objectives and Context (5 marks)

- 4-5** The candidate provides a detailed analysis of the factors involved and shows a clear understanding of the context, together with fully explaining the value of the study with regard to both design and manufacture.
- 2-3** The candidate provides some analysis of the factors involved and shows an understanding of the context. There is some evidence of thought concerning the value of the study with regard to both design and manufacture.
- 0-1** The candidate shows some understanding of the context, but there is limited evidence with regard to the value of the study and the analysis of the factors involved with regard to both design and manufacture.

### 2. The Plan of Action and its Execution (5 marks)

- 4-5** The candidate clearly identifies a range of appropriate investigative techniques that are undertaken successfully and demonstrates a very good understanding of both designing and manufacturing. The collation of the data is excellent and the action plan is both thorough and relevant. The way the study has been executed and any necessary changes are very clear.
- 2-3** The candidate identifies a range of appropriate investigative techniques that are undertaken successfully and demonstrates a good understanding of both designing and manufacturing. The collation of the data is good and the action plan is thorough, but not always relevant. The way the study has been executed and any necessary changes are quite clear.
- 0-1** The candidate identifies some appropriate investigative techniques, which are undertaken only with limited success and demonstrates some understanding of designing and/or manufacturing. The collation of the data is weak and the action plan lacks cohesion. The way the study has been executed and any necessary changes are unclear.

### 3. Analysis and Synthesis (20 marks)

- 14-20** The candidate displays high level analytical skills and has selected relevant information with real flair and discrimination, regarding both designing and manufacturing together with their moral and ethical implications.

- 6-13** The candidate displays good analytical skills and has selected information that is mostly relevant and shown some flair and discrimination, regarding both designing and manufacturing together with their moral and ethical implications.
- 0-5** The candidate has selected some relevant information, but there is little evidence of flair and discrimination, regarding either designing or manufacturing and with their moral and ethical implications.

**4. Conclusions, Evaluations  
and Recommendations  
(15 marks)**

- 11-15** The candidate provides a critical analysis of the results of the study and fully justifies the Conclusions, Evaluations and Recommendations, together with displaying an excellent understanding of the ways in which the study could be extended, with regard to both designing and manufacturing.
- 5-10** The candidate provides an analysis of the results of the study and justifies the Conclusions, Evaluations and Recommendations, together with displaying a good understanding of the ways in which the study could be extended, with regard to both designing and manufacturing.
- 0-4** The candidate provides a limited analysis of the results of the study and draws some Conclusions, Evaluations and Recommendations, together with displaying some understanding of the ways in which the study could be extended, with regard to designing and/or manufacturing.

**5. Presentation (5 marks)**

- 4-5** The candidate's submission is very clearly and logically presented and utilises entirely appropriate and varied techniques. An informed third party can access the information very easily, with regard to both designing and making and there is clear and varied evidence of the use of ICT.
- 2-3** The candidate's submission is clear and logically presented and utilises a number of appropriate and varied techniques. An informed third party can access the information, with regard to both designing and making. There is some evidence of the use of ICT.
- 0-1** The candidate's submission is clear and logically presented and utilises a number of appropriate and varied techniques. An informed third party can access the information, with regard to designing and making, but there is little or no evidence of the use of ICT.

## 20.6 Evidence to Support the Award of Marks

Candidates will be required to submit a portfolio of work and appropriate evidence of making/manufacturing for each coursework unit. Portfolios should show full evidence for the relevant assessment criteria, together with relevant evidence of making/manufacturing knowledge and understanding and, where appropriate, skills.

In addition, teachers should provide explanatory notes on the Candidate Record Form where it is considered important to draw certain aspects of a candidate's work to the attention of the moderator. Such annotation should also be of value for internal standardising and providing feedback to candidates as their work progresses.

Teachers should keep records of their assessments during the course, in a form which facilitates the complete and accurate submission of the final assessments at the end of the course.

When the assessments are complete, the final marks awarded under each of the assessment criteria must be entered on the appropriate Candidate Record Form, with supporting information where relevant given in the spaces provided. See Appendices B, C and D for examples of forms.

A Candidate Record Form for each coursework unit submitted must be attached to the candidate's work.

## Supervision and Authentication

---

### 21.1 Supervision of Candidates' Work

Candidates' work for assessment must be undertaken under conditions which allow the teacher to supervise the work and enable the work to be authenticated. If it is necessary for some assessed work to be done outside the centre, sufficient work must take place under direct supervision to allow the teacher to authenticate each candidate's whole work with confidence.

It is accepted that in design and technology candidates will draw on the work and ideas of other designers. It must be understood however that to present the work of others without acknowledgement will be regarded as deliberate deception. Such sources should be acknowledged in the text of their design work or in a bibliography.

---

### 21.2 Guidance by the Teacher

The work assessed must be solely that of the candidate concerned. Any assistance given to an individual candidate which is beyond that given to the group as a whole must be recorded on the Candidate Record Form.

As coursework is such a significant element of this specification, it must be seen as much a vehicle for teaching as for assessment. It is expected therefore that teachers will continue to teach and support their candidates as part of normal teaching. Advice given should normally be presented in such a way that candidates have alternative possibilities to explore and can make their own decisions about accepting it.

---

### 21.3 Unfair Practice

At the start of the course, the supervising teacher is responsible for informing candidates of the AQA Regulations concerning malpractice. Candidates must not take part in any unfair practice in the preparation of coursework to be submitted for assessment, and must understand that to present material copied directly from books or other sources without acknowledgement will be regarded as deliberate deception. Centres must report suspected malpractice to AQA. The penalties for malpractice are set out in the AQA regulations.

---

### 21.4 Authentication of Candidates' Work

Both the candidate and the teacher are required to sign declarations confirming that the work submitted for assessment is the candidate's own. The teacher declares that the work was conducted under the specified conditions, and records details of any additional assistance.

## Standardisation

### 22.1 Standardisation Meetings

Annual standardisation meetings will usually be held in the autumn term. Centres entering candidates for the first time must send a representative to the meetings. Attendance is also mandatory in the following cases:

- where there has been a serious misinterpretation of the specification requirements;
- where the nature of coursework tasks set by a centre has been inappropriate;
- where a significant adjustment has been made to a centre's marks in the previous year's examination.

Otherwise attendance is at the discretion of centres. At these meetings support will be provided for centres in the development of appropriate coursework tasks and assessment procedures.

### 22.2 Internal Standardisation of Marking

The centre is required to standardise the assessments across different teachers and teaching groups to ensure that all candidates at the centre have been judged against the same standards. If two or more teachers are involved in marking a component, one teacher must be designated as responsible for internal standardisation. Common pieces of work must be marked on a trial basis and differences between assessments discussed at a training session in which all teachers involved must participate. The teacher responsible for standardising the marking must ensure that the training includes the use of reference and archive materials such as work from a previous year or examples provided by AQA. The centre is required to send to the moderator the Centre Declaration Sheet (see Appendix E), duly signed, to confirm that the marking of centre-assessed work at the centre has been standardised. If only one teacher has undertaken the marking, that person must sign this form.

## Administrative Procedures

### 23.1 Recording Assessments

The candidates' work must be marked according to the assessment criteria set out in Sections 20.2 to 20.5. The marks and supporting information must be recorded in accordance with the instructions in Section 20.6. The completed Candidate Record Form(s) for each candidate must be attached to the relevant work and made available to AQA on request. A separate Candidate Record Form is provided for each of the three centre-assessed components. (See Appendices B, C and D).

### 23.2 Submitting Marks and Sample Work for Moderation

The total component mark for each candidate must be submitted to AQA by the specified date on the relevant mark sheet(s) provided by AQA or via Electronic Data Interchange (EDI). Centres will be informed which candidates' work is required in the samples to be submitted to the moderator.

### 23.3 Factors Affecting Individual Candidates

Details for candidates with particular requirements are available from AQA and centres should ask for a copy of "*Regulations and Guidance relating to Candidates with Particular Requirements*".

Teachers should be able to accommodate the occasional absence of candidates by ensuring that the opportunity is given for them to make up missed assessments.

Special consideration should be requested for candidates whose work has been affected by illness or other exceptional circumstances. If work is lost, AQA should be notified immediately of the date of the loss, how it occurred, and who was responsible for the loss. AQA will advise on the procedures to be followed in such cases.

Where special help which goes beyond normal learning support is given, AQA must be informed so that such help can be taken into account when assessment and moderation take place.

Candidates who move from one centre to another during the course sometimes present a problem for a scheme of internal assessment. Possible courses of action depend on the stage at which the move takes place. If the move occurs early in the course the new centre should take responsibility for assessment. If it occurs late in the course it may be possible to accept the assessments made at the previous centre. Centres should contact AQA at the earliest possible stage for advice about appropriate arrangements in individual cases.

### 23.4 Retaining Evidence

The centre must retain the work of all candidates, with the Candidate Record Forms attached, under secure conditions, from the time it is assessed, to allow for the possibility of an enquiry upon result. The work may be returned to candidates after the issue of results provided that no enquiry upon result is to be made which will include re-moderation of the coursework component. If an enquiry upon result is to be made, the work must remain under secure conditions until requested by AQA.

## 24

## Moderation

### 24.1 Moderation Procedures

One moderator will be appointed for Unit 2 and Unit 5. A separate moderator will be appointed for Unit 4, the Product Study. Moderation of coursework will be achieved by postal inspection.

Moderators will re-assess samples of work from each centre. The centre's marks must be submitted to AQA by the 15 May in the year in which the qualification is awarded. A copy must be sent to the moderator at the same time. Instructions about sending the sample of work will be given in the Spring Term.

### 24.2 Post-Moderation Procedures

On publication of the GCE results, the centre is supplied with details of the final marks for the coursework component(s).

The candidates' work is returned to the centre after the examination. The centre will also receive feedback on the appropriateness of the tasks set, the accuracy of the assessments made, and the reasons for any adjustments to the marks.

Some candidates' work may be retained by AQA for archive or training purposes.

## Awarding and Reporting

### 25

## Grading, Shelf-Life and Re-Sits

### 25.1 Qualification Titles

The qualifications based on this specification have the following titles.

- AQA Advanced Subsidiary GCE in Design and Technology: Food Technology.
- AQA Advanced Level GCE in Design and Technology: Food Technology.

### 25.2 Grading System

Both the AS and the full A Level qualifications will be graded on a five-grade scale: A, B, C, D and E. Candidates who fail to reach the minimum standard for grade E will be recorded as U (unclassified) and will not receive a qualification certificate.

Individual assessment unit results will be certificated.

### 25.3 Shelf-Life of Unit Results

The shelf-life of individual unit results, prior to the award of the qualification, is limited only by the shelf-life of the specification.

### 25.4 Assessment Unit Re-Sits

Each assessment unit may be re-taken an unlimited number of times within the shelf-life of the specification. The best result will count towards the final award. Candidates who wish to repeat an award must enter for at least one of the contributing units and also enter for certification (cash-in). There is no facility to decline an award once it has been issued.

### 25.5 Minimum Requirements

Candidates will be graded on the basis of work submitted for the award of the qualification.

### 25.6 Awarding and Reporting

The regulatory authorities, in consultation with GCE awarding bodies, developed a revised Code of Practice for new GCE qualifications which were introduced in September 2000. This specification complies with the grading, awarding and certificate requirements of the current GCSE, GCSE in vocational subjects, GCE, VCE, GNVQ and AEA Code of Practice 2006/7 and will be revised in the light of any subsequent changes for future years.

# Appendices

## A

### Grade Descriptions

The following grade descriptors indicate the level of attainment characteristic of the given grade at A Level. They give a general indication of the required learning outcomes at each specific grade. The descriptors should be interpreted in relation to the content outlined in the specification; they are not designed to define that content.

The grade awarded will depend in practice upon the extent to which the candidate has met the assessment objectives (as in Section 6) overall. Shortcomings in some aspects of the examination may be balanced by better performances in others.

#### GRADE A

Combining their designing and making skills with knowledge and understanding, candidates:

- a when generating ideas and clarifying the task, use an imaginative range of appropriate primary research methods, analyse and record information and demonstrate a high degree of selectivity;
- b when developing and communicating ideas, take into account functionality, aesthetics, ergonomics, maintainability, quality and user preferences, then work to a specification which could be developed in conjunction with an external partner or client. Take account of commercial manufacturing requirements in terms of scale of production, time and resource management. Demonstrate an understanding of product life cycles.

Initiate and develop a wide range of imaginative and feasible alternative ideas, showing that they effectively and completely satisfy all of the specification criteria. Demonstrate high level communication skills through a wide variety of appropriate and effective methods and techniques, including information technology, graphical, numerical and linguistic;

- c when planning and evaluating, demonstrate good management of time and resources in the development of design proposals and appropriately test and evaluate final outcomes, as well as the various stages of development, discriminating between aspects which performed well and others which could be further improved. Evaluate the effect of the design proposal upon the wider society, taking into account, spiritual, moral, social, economic and environmental implications.

- d when making, demonstrate demanding and high level skills which include shaping, forming, assembly and finishing, and show imaginative use of materials. Take into account quality assurance procedures and precise and appropriate levels of tolerance in the realisation of design proposals. Select, use and demonstrate understanding of a range of materials/components and production processes appropriate to the specification and the scale of production. Demonstrate high levels of safety awareness both in the working environment and beyond.

## GRADE C

Combining their designing and making skills with knowledge and understanding, candidates:

- a when generating ideas use a wide range of appropriate research methods, analyse and record information and demonstrate a degree of selectivity;
- b when developing and communicating ideas, take into account functionality, aesthetics, ergonomics, maintainability, quality and user preferences. Take account of commercial manufacturing requirements in terms of scale of production, time and resource management.

Initiate and develop a range of feasible alternative ideas and show that they satisfy all of the specification criteria. Demonstrate a good level of communication skills through a variety of appropriate and effective methods and techniques, including information technology, graphical, numerical and linguistic;

- c when planning and evaluating, demonstrate management of time and resources in the development of the design proposal and test and evaluate both final outcomes and the various stages of development. Evaluate the effect of design proposals upon the wider society, taking into account, spiritual, moral, social, economic and environmental implications;
- d when making, demonstrate high level skills which include, shaping, forming, assembly and finishing. Take into account quality assurance procedures and appropriate levels of tolerance in the realisation of their design proposals. Select, use and demonstrate understanding of a range of materials/components and production processes appropriate to the specification and the scale of production. Demonstrate safety awareness both in their working environment and beyond.

**GRADE E**

Combining their designing and making skills with knowledge and understanding, candidates:

- a when generating ideas, use a range of research methods, analyse and record information appropriately:
- b when developing and communicating ideas, take into account functionality, aesthetics, ergonomics, quality and user preferences. Take some account of commercial manufacturing requirements in terms of scale of production, time and resource management, although this may be superficial.

Initiate and develop a limited range of feasible alternative ideas and show that they satisfy most of the specification criteria. Demonstrate a range of communication methods and techniques to a competent level, including information technology, graphical, numerical and linguistic;

- c when planning and evaluating, demonstrate some management of time and resources in the development of the design proposal and test and evaluate both the final outcome and the various stages of development. Evaluate the effect of design proposals upon the wider society, possibly taking into account, spiritual, moral, social, economic and environmental implications;
- d when making, demonstrate an adequate level of making/modelling skills which include, shaping, forming, assembly and finishing. Take into account quality assurance procedures and levels of tolerance in the realisation of their design proposals. Select, use and demonstrate understanding of a limited range of materials/components and production processes appropriate to the specification and the scale of production. Demonstrate safety awareness in their working environment.

The Candidate Record Forms have been deleted from this specification because of changed requirements. The latest version of the forms are on the [Coursework Administration](#) pages of the Website.

This page has intentionally been left blank.

This page has intentionally been left blank.

This page has intentionally been left blank.

This page has intentionally been left blank.

This page has intentionally been left blank.

This page has intentionally been left blank.

F

## Overlaps with Other Qualifications

Overlaps exist between this and the Design and Technology: Product Design and Systems and Control Technology specifications. The overlap is primarily in the design process and the scheme of assessment. As all three specifications conform to the AS/A Design and Technology Subject Criteria, there are also overlaps of broad content, e.g. ICT, Health and Safety, systems and control, industrial and commercial practice, but each is dealt with in the context of the material areas embodied in the specification title. There is also an overlap between Food Technology and Home Economics in the materials used, but there are major differences in the processes involved.