



# National Qualifications

Home Economics

Higher

**Technological Project: all contexts**

**Teacher/lecturer guidance**

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## Introduction

To gain the award for this Course, candidates must pass all the Unit assessments as well as the external Course assessment. The external Course assessment consists of a Question Paper and a Technological Project.

The Technological Project will enable candidates to demonstrate integration of knowledge and skills across the component Units to realise a solution and demonstrate technological capability.

SQA issues two Technological Project briefs annually (at the end of September) — candidates will choose one. The time allocated for the Technological Project is 20 hours and it will be completed under supervision in your centre. The Technological Project pro forma must be used to record. Candidates should not add additional pages — they will not be marked.

**Time to complete the Technological Project may be taken from the additional 40 hours allocated to the Course and from time available within the component Units. A number of outcomes in the component Units will be achieved when candidates undertake the Technological Project, thus reducing the demands and time required for internal Unit assessment.**

## Assessment

The Technological Project is worth 70 marks and is externally assessed. A breakdown of the marks for each of the steps of the Technological Project is as follows:

Technological Project – mark allocation			
Step	Stage	Marks	Assessment
1	Analysing	22	The completed pro forma is submitted to SQA to be marked
2	Investigating	15	
3	Manufacture	21	
4	Evaluation	12	
Total		70	

The amount of space allowed in the pro forma and the relevant mark allocation should guide candidates as to the length and weighting of each stage. **Candidates must use only the number of pages within the pro forma.** Pages 25 and 26 are provided at the back of the pro forma and these should be used if candidates require additional recording space.

**Additional pages must not be added.** Candidates should therefore be encouraged to present their work in a format that is clear and concise, for example by using bullet points or tables. **It is best practice for candidates to complete the pro formas electronically.**

**Candidates' work must be their own.** Candidates should use the *Notes of Guidance for Candidates on the Technological Project* and read the *Your Coursework* booklet issued by SQA.

**Candidates must sign the flyleaf for the Technological Project pro forma** to certify that the work undertaken in the Technological Project is their own.

**External Assessment Reports** — External Assessment reports give detailed feedback of how the candidates performed in the previous session's Technological Project, and offer advice for improvement.

**Photographic evidence of the solution** taken during and after manufacture is required to certify that the work is that of the candidate. **If photographic evidence is not provided, no further marking of the Technological Project will be carried out as no evidence has been provided on which to base the marking of the next stages of work.**

Teachers/lecturers may offer guidance by giving:

- ◆ advice on source information, persons, agencies or establishments that may be able to help
- ◆ assistance with planning deadlines
- ◆ advice on the suitability and practicality of the ideas produced by the candidate

The date for submission of the completed Technological Project pro forma will be issued by SQA in the document *Centre requirements for Internal and External Assessment*, which is posted on SQA's website in the autumn of each year.

Where the Technological Project is being used to subsume the outcomes of the component Units of the Course, teachers and lecturers should make reference to the document *The Technological Project and Unit assessment — notes of guidance for teachers/lecturers preparing for central verification*.

## **Note on the use of the electronic pro forma**

Care is required when inserting text. The text boxes have been protected to ensure that pages cannot be moved as a result of typing in excessive text. However if a candidate:

- ◆ inserts excessive text into the text box provided, or
- ◆ inserts additional text at a later time into the text boxes provided

the text at the bottom of the text box may disappear, ie the text has been pushed below the bottom of the text box and so does not appear as visible or printable text. This 'additional' text would be best placed in the space provided at the back of the pro forma (pages 25 and 26).

## **Guidance on the breakdown of marks**

The time allocated for the completion of the Technological Project will be dependent on:

- ◆ the course plan adopted by the centre
- ◆ the needs of the candidate

*Note: The project is designed to be completed in 20 hours.*

## Step 1: Analysing — total mark allocation of 22 marks

### 1.1 Analyse a complex situation, issue or problem (Identification of the key points with explanation) — 6 marks available

The candidate should identify the 'core' key points — these are all the main key words of the Technological Project brief.

The number of 'core' key points which can be identified will depend on the wording of the Technological Project brief.

Candidates should number each key point identified.

#### Candidate identifies the key points — 3 marks

Candidates who record all the 'core' key points	2 marks
Candidates who record half or more, but not all the 'core' key points	1 mark
Candidates who record less than half the 'core' key points	0 marks

*Candidates who provide an additional key point, other than those identified as 'core', will be awarded an additional 1 mark.*

#### Candidate provides basic and accurate explanation of key points and additional key points — 2 marks

Marks are determined by the number of key points and additional key points which have basic and accurate explanation.

If all key points have a basic and accurate explanation	2 marks
If half or more, but not all the key points have a basic and accurate explanation	1 mark
If less than half the key points have a basic and accurate explanation	0 marks

#### Candidate provides detailed and accurate explanation — 1 mark

Candidates who provide further accurate detail within the explanations will be awarded an additional mark. Extra detail means one additional point of explanation is provided for any one of the key or additional key points.

### 1.2 Draw up appropriate criteria for a specification – 10 marks available

#### Candidate's specification allows for a range of possible solutions —1 mark

Specification allows for a range of possible solutions which are relevant to the brief	1 mark
If a range of solutions is not possible	0 marks

#### Candidate provides five specification points, each containing more detail than the brief — 2 marks

**Note:** Candidates are expected to produce a **minimum of five** specification points. However, due to constraints of the time allocated for the Technological Project, candidates should not identify more than **seven** specification points as this would involve the candidate in unnecessary work.

Specification points must be **valid** (derived from the brief) to gain marks in this section. When drawing up the criteria for the specification, candidates should not just rewrite the key points — greater detail is required.

Five <b>valid</b> specification points contain more detail than the brief	2 marks
Three or four <b>valid</b> specification points contain more detail than the brief	1 mark
Less than three <b>valid</b> specification points contain more detail than the brief	0 marks

**Candidate has written all specification points in measurable/testable terms — 2 marks**

Candidates must indicate how each specification point should be able to be measured/tested by a valid method.

All specification points are measurable/tested	2 marks
Half or more, but not all specification points are measurable/tested	1 mark
Less than half the specification points are measurable/tested	0 marks

**Candidate has linked each specification point to the key points and additional key point(s) — 2 marks**

Candidates must show that each specification point is linked to the key points and additional key points identified in Step 1.1. All key points should be covered.

Specification points are linked to all key points and additional key points	2 marks
Specification points are linked to half or more, but not all key points and additional key points	1 mark
Specification points are linked to less than half the key points and additional key points	0 marks

**Candidate provides basic explanations — 2 marks**

Basic explanations of the specification points, relevant to the project brief, should be provided by the candidate.

Basic explanations are provided for all specification points	2 marks
Basic explanations are provided for half or more, but not all specification points	1 mark
Basic explanations are provided for less than half the specification points	0 marks

**Candidate provides detailed explanation — 1 mark**

If further detail, relevant to the project brief, is provided within the explanation then an additional mark will be awarded. Extra detail means one additional point of explanation is provided for any one of the specification points.

**1.3 Devise an overall plan for investigations — 6 marks available**

**Candidate presents a list of investigations — 2 marks**

Candidates who provide a list of possible investigations which focus clearly on:

- ◆ the key points of the project brief
- ◆ the specification points
- ◆ have a clear aim/purpose

will be awarded 2 marks.

Candidates who provide a list of investigations which do not focus clearly on the key points and the specification will be awarded 1 mark.

Obvious omissions from the list of investigations will result in the full marks being unattainable.

### **Candidate identifies techniques to be used — 2 marks**

All techniques must be appropriate for the investigations and so allow the candidate the possibility of collecting relevant data/information.

Where techniques are not consistently appropriate, candidates will be awarded 1 mark.

### **Candidate justifies the need for the investigation —2 marks**

All justifications must be:

- ◆ well thought out
- ◆ linked to the investigation

Lack of clarity in the justification will result in candidates being unable to gain the full mark allocation.

From the proposed list of investigations drawn up in 1.3 above, candidates should form a prioritised list of those investigations which they propose to undertake.

No marks are awarded at this stage, but candidates are expected to focus on those investigations most relevant to the needs of the project brief. A number of investigations may be combined by using one technique.

**No more than three investigations**, depending on their nature, could realistically be carried out in the time available. The three investigations identified should ensure that all specification points are investigated. Candidates will be disadvantaged if they do fewer than three as they will not have collected sufficient data to create a valid solution.

Candidates who intend to use a questionnaire as an investigation must issue a minimum of 20 to gain valid results. If, however, too many questionnaires are distributed, collecting the data may become problematic and time consuming for candidates.

Candidates should complete this work on pages 9–11 of the pro forma.

## Step 2: Investigating — total mark allocation of 15 marks

### 2.1 Implement the overall plan for investigation — 12 marks available

The mark allocation for this area will be based on candidates' performance in a series of investigations. Candidates will be assessed on the results and conclusions from each investigation — see the marking criteria breakdown listed below.

**Teachers/lecturers must ensure candidates present the results and conclusions of each investigation on pages 9–11 of the pro-forma only.**

Candidates using computer software to produce results, eg bar charts or graphs must ensure that these are presented only on the pages allocated for this work, ie pages 9–11 of the pro-forma. Candidates who present the results and conclusions of each investigation on more than one A4 sheet of paper will not meet the marking criteria (results must be brief, concise and easy to interpret).

**See Appendix 1 for guidance on carrying out investigations/tests.**

Marking criteria:

- ◆ results must be brief, concise and easy to interpret
- ◆ results must show a clear link to the aim/purpose of the investigation
- ◆ results must be derived from the investigations and based on facts and evidence
- ◆ conclusions must be based on the results obtained

All investigations, candidates have fulfilled the aims on page 8 of the pro forma	3 marks
Half or more investigations, candidates have fulfilled the aims on page 8 of the pro forma	2 marks
Less than half investigations, candidates have fulfilled the aims on page 8 of the pro forma	1 mark
In no investigations, candidates have not fulfilled the aims on page 8 of the pro forma	0 marks

All investigations contain brief, concise and easy to interpret results	3 marks
Half or more investigations contain brief, concise and easy to interpret results	2 marks
Less than half investigations contain brief concise and easy to interpret results	1 mark
No investigations contain brief, concise and easy to interpret results	0 marks

All results are based on fact/relevant to option statement	3 marks
Half or more of the results are based on fact/relevant to design brief	2 marks
Less than half of the results are based on fact/relevant to design brief	1 mark
No results are based on fact/relevant to design brief	0 marks

All conclusions are based on the results and/or show progression	3 marks
Half or more conclusions are based on the results and/or show progression	2 marks
Less than half conclusions are based on the results and/or show progression	1 mark
No conclusions are based on results and/or does not show progression	0 marks

## 2.2 Derive a solution from the investigations — 3 marks available

Generate one solution — 2 marks, ie ONE dish or ONE textile item only —no marks can be allocated for Steps 3 or 4 if candidates generate more than one solution.

Candidates derive **one solution** which must be:

Relevant to the needs of the project brief	1 mark
Based on the results and conclusions reached in the investigations	1 mark
Describe the solution in detail	1 mark

The solution should be described in detail so it can be **visualised**. Various methods may be used eg — written details, recipes, sketches, diagrams or labelled diagrams, to ensure clarity.

### Step 3: Manufacture and Testing — total mark allocation of 21 marks

#### 3.1 Manufacture and test the chosen solution — 10 marks available

##### Candidate completes the planned sequence of work — 5 marks

Candidates must complete the plan **before** starting to manufacture the solution.

If the plan is written **retrospectively**, candidates will not be able to access the full marks available.

Candidates who draw up a sequence of work which <b>consistently</b> demonstrates effective deployment of time	5 marks
Candidates who draw up a sequence of work with <b>minor lapses</b> in the deployment of time	4 marks
Candidates who draw up a sequence of work with <b>occasional lapses</b> in the deployment of time	3 marks
Candidates who draw up a sequence of work with <b>regular lapses</b> in the deployment of time	2 marks
Candidates who draw up a sequence of work with <b>frequent lapses</b> in the deployment of time	1 mark
Candidates who submit a retrospective sequence of work	0 marks

Candidates may choose to present their sequence of work in an appropriate form, eg table, chart, written details or flowchart. An indication of dates, times and details of the proposed work must demonstrate effective use of time by the candidate.

The sequence of work must show logical progression.

Candidates' work must be completed on page 13 of the pro forma.

##### Candidate identifies and requisition all equipment and resources — 3 marks

Candidates who identify and requisition all resources and equipment correctly	3 marks
Candidates who identify and requisition most resources and equipment	2 marks
Candidates who omit any obvious resources and/or equipment	1 mark

Resources will depend on the chosen solution and may relate to food, textiles, packaging materials, equipment.

##### Candidate consistently justifies effective deployment of equipment and resources — 2 marks

Justification should relate to all the identified equipment and resources to gain full marks.

**After** completing the **plan** for manufacture, candidates should start to manufacture the solution.

Candidates should be encouraged to make notes on page 16 of the pro forma as they are carrying out the manufacturing process. Notes may be made on how manufacture is proceeding, any problems encountered and any changes/modifications made to the plan.

**Note: Before candidates manufacture their solution they should be encouraged to complete the preparation for the testing of their proposed solution (Step 3.2). Candidates are required to devise two tests, then produce any materials required to conduct each test before manufacturing the solution. For example, interview questions, facilities/ graphs/charts to record results. See page 15 of the pro forma.**

**Photographic evidence of the candidates' work must be attached to page 17 of the pro forma.**

**Two photographs are required:**

- ◆ one should provide evidence of the solution **during manufacture**
- ◆ the other should provide evidence of the **completed solution**

Although the quality of the photographs is not important, they **must** give an indication of the type of work being carried out and completed by the candidate. Although no marks are awarded here, **photographic evidence must be provided** of the candidates' solution.

**Note:** Page 17 of the electronic version of the pro forma has been set up to allow the insertion of digital photographs. Clicking the space in the pro forma will bring up a dialogue box that allows candidates to insert a picture file.

### **3.2 Devise two tests for the manufactured solution — 3 marks available**

#### **Candidate presents two tests — 1 mark**

Candidates should present **two** appropriate tests – failure to do this will result in no marks being awarded.

#### **Candidate identifies techniques to be used — 1 mark**

Techniques must be appropriate to the tests, allowing candidates to collect relevant data/information.

#### **Candidate justifies the two tests — 1 mark**

Justifications should be:

- ◆ clear and well thought out
- ◆ linked to the test

### **3.3 Implement the tests for the manufactured solution — 8 marks available**

Marking criteria

- ◆ results must be brief, concise and easy to interpret

- ◆ results must show a link to the aim/purpose of the test
- ◆ results must be derived from the tests and based on facts and evidence
- ◆ conclusions must be based on the results obtained

For both tests, candidates have done as they intended from page 15	2 marks
For one test, candidates have done as they intended from page 15	1 mark
No tests, candidates have not done as they intended from page 15	0 marks

Both tests contains brief, concise and easy to interpret results	2 marks
One test contains brief, concise and easy to interpret results	1 mark
No tests contain brief, concise and easy to interpret results	0 marks

All results of tests are based on fact/relevant to specification points/design brief	2 marks
One result of tests is based on fact/relevant to specification points/design brief	1 mark
No results of tests are based on fact/relevant to specification points/design brief	0 marks

Conclusions for two tests are based on the results and/or show progression	2 marks
Conclusions for one test are based on the results and/or show progression	1 mark
No conclusions for the tests are based on results and/or show no progression	0 marks

**Note: Candidates are expected to include any literary titles/authors, web addresses and the title of any person/expert interviewed.**

## Step 4: Evaluation — total mark allocation of 12 marks

### 4.1 Evaluate the chosen solution — 6 marks available

**Candidate provides accurate explanation, some of which is detailed against the specification — 5 marks**

Candidates must copy and paste the specification points in the appropriate column. Candidates must evaluate the solution against each specification point. Candidates should use the results of investigations, manufacture and/or testing where appropriate.

Candidates who evaluate five or more specification points	5 marks
Candidates who evaluate four specification points	4 marks
Candidates who evaluate three specification points	3 marks
Candidates who evaluate two specification points	2 marks
Candidates who evaluate one specification point	1 mark

**Candidate provides detailed accurate explanation (specification) — 1 mark**

If further detail is provided in the explanations, an additional mark will be awarded.

Extra detail means that one additional point of evaluation is provided for **any one** of the specification points.

### 4.2 Evaluate the Technological Project — 6 marks available

All of the following criteria must be used in the evaluation

- ◆ time
- ◆ resources
- ◆ skills and abilities

**Marks will not be awarded to candidates who do not use these criteria in their evaluation.**

The evaluation, which may include adaptations/modifications, **must be based on evidence** which can be found within the candidates' Technological Project pro forma, eg from their investigations, manufacture and/or testing.

In their evaluation, the candidates should give an opinion based on evidence that can be found within their Technological Project and then explain the consequences for the final solution.

Candidates should provide **two** points of evaluation for each step of the Technological Project. One mark is awarded for each point of evaluation. A minimum of one mark must come from each step evaluated.

Step 1	Analysing	2 marks
Step 2	Investigating	2 marks
Step 3	Manufacturing and Testing	2 marks

Pages 23 to 24 of the pro forma should be used for the evaluation.

# Appendix 1

## Guidance for investigations/ tests

### Questionnaire

- ◆ minimum of 20 respondents
- ◆ minimum of 5–8 questions linked to aim/specification to allow relevant data to be collected
- ◆ all question and all possible answers must be displayed
- ◆ all responses must be displayed, including nil responses
- ◆ given constraints of space, it is not necessary to display results as pie charts/graphs
- ◆ table format for displaying results of questionnaires can be space saving

### Survey

- ◆ The source(s) of information must be identified. The sources that could be used include the internet, literary, shop manager, restaurant/café manager.
- ◆ Source of information must be relevant to investigation.
- ◆ The place selected should be related to the quality and quantity of the data available, rather than the number of sources. However, more than one source should be used.
- ◆ Information should be displayed using appropriate headings, sub–divisions etc.

### Interviews

- ◆ The suitability of the person interviewed should be carefully considered. The interviewee and their position in establishment/job title should be clearly identified.
- ◆ A minimum of 5–8 relevant questions linked to aim/specification to allow relevant data to be collected.
- ◆ Open-ended questions should be used to allow more data to be collected from the interviewee.
- ◆ Questions should be carefully formatted to extract useful facts and avoid one word responses (such as yes/no).
- ◆ All questions and responses must be displayed.

### Internet/literary search

- ◆ all sources must be clearly identified
- ◆ should be related to the quality/quantity/relevance of the data available rather than the number of sources
- ◆ graphics may be included where relevant
- ◆ data collected should be organised using appropriate headings/subdivisions etc
- ◆ information should not be lifted 'en bloc' from websites, it is appropriate to summarise key points which are relevant to the aim/specification

### Costing

- ◆ breakdown cost of all ingredients/components must be included

- ◆ details of quantities and unit costs must be included
- ◆ sources should be included where appropriate
- ◆ comparative costing should measure 'like for like'

**Note:** Costing only proves cost of items/ components. On its own it does not prove low/ high cost, value for money, acceptability of price to target group.

### **Nutritional analysis**

- ◆ sources must be shown
- ◆ all nutrients relevant to the brief should be shown
- ◆ nutritional analysis of all ingredients must be included — a 'total' for a dish is not acceptable
- ◆ sufficient data must be accessed in order to draw relevant conclusions
- ◆ when used as a test the suitability of the results should be assessed by a suitable expert, eg community dietician, food technologist

### **Fabric analysis**

- ◆ there is no need to repeat fabric tests where information is already easily available in textbooks/websites
- ◆ fabrics used for testing must be clearly identified, ie construction/fibre composition
- ◆ only fabrics being considered for potential solution should be tested/sampled/investigated towards final solution
- ◆ details about the method of testing must be given

### **Sensory testing**

- ◆ all potential solutions must be clearly described
- ◆ breakdown of results must be shown, a summary of results is not acceptable
- ◆ key must be provided
- ◆ it is appropriate to ask questions to elicit potential improvements/modifications
- ◆ it is suggested for sensory testing that a minimum of five people are used to assess the product(s)

## Appendix 2

### Mark allocation checklist

Step	Mark breakdown	Mark allocation	
1.1	<b>Identification of the key points with explanation</b>		
	Identify the key points	2	
	Additional key points	1	
	Key points plus basic and accurate explanation	2	
1.2	Key points plus detailed and accurate explanation	1	
	<b>Draw up appropriate criteria for a specification</b>		
	Allows for a range of solutions	1	
	Contains more detail than the brief	2	
	Be written in measurable terms/ able to be tested	2	
	Link each specification point to key points	2	
Provide basic explanations	2		
Provide detailed explanations	1		
1.3	<b>Devise an overall plan for investigation</b>		
	Present a list of investigations	2	
	Identify techniques to be used	2	
	Justify the need for the investigations	2	
<b>Total marks available for Step 1</b>		<b>22</b>	
2.1	<b>Implement the overall plan for investigations</b>		
	Aims fulfilled	3	
	Brief, concise, easy to interpret	3	
	Relevant and valid results	3	
Conclusions	3		
2.2	<b>Derive one solution form the investigations</b>		
	Generate one solution based on evidence	1	
	Relevant to brief	1	
	Describe the solution in detail	1	
<b>Total marks available for Step 2</b>		<b>15</b>	

<b>Step</b>	<b>Mark breakdown</b>	<b>Mark allocation</b>	
<b>3.1</b>	<b>Manufacture the chosen solution</b> Step by step sequence of work showing effective deployment of time Requisition of resources Justification of resources/ equipment	<b>5</b> <b>3</b> <b>2</b>	
<b>3.2</b>	<b>Devise two tests for the manufactured solution</b> Present two tests Identify techniques to be used Justify the two tests	<b>1</b> <b>1</b> <b>1</b>	
<b>3.3</b>	<b>Implement the tests for the manufactured solution</b> Aims fulfilled Brief, concise, easy to interpret Relevant and valid results Conclusions	<b>2</b> <b>2</b> <b>2</b> <b>2</b>	
<b>Total marks available for Step 3</b>		<b>21</b>	
<b>4.1</b>	<b>Evaluate the chosen solution</b> Accurate explanation some of which is detailed against each specification point (to include results of investigations and/ or tests where appropriate)  Valid evaluations provide detailed and accurate explanation	<b>5</b> <b>1</b>	
<b>4.2</b>	<b>Evaluate the Technological Project</b> Evaluate steps 1-3 of the Technological Project with detailed reference to the following criteria:  Time Resources Skills/ abilities  Step 1 Analysing Step 2 Investigating Step 3 manufacturing and Testing	<b>2</b> <b>2</b> <b>2</b>	
<b>Total marks available for Step 4</b>		<b>12</b>	
<b>Total marks available</b>		<b>70</b>	