



# T Level Technical Qualification in Science

Occupational specialism assessment (OSA)

## Food Sciences

Assignment 4

Mark scheme

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## Task 1: collect, analyse and interpret food production data

**Note:** Please refer to separate spreadsheet for analysis results; Appendix 1, mark scheme 4.

Band	Mark	Descriptor
4	10–12	The student has: <ul style="list-style-type: none"> <li>extrapolated and interpreted relevant trends using industry standard mathematical processes to justify conclusions</li> <li>presented data clearly and logically using images and other tools (for example, graphs) as appropriate, using technically accurate language</li> <li>supported answers with information that is relevant, specific, and precise</li> </ul>
3	7–9	The student has: <ul style="list-style-type: none"> <li>explained relevant trends, giving reasons for them, supported by appropriate mathematical processes</li> <li>presented data clearly with the use of some technically accurate language</li> </ul>
2	4–6	The student has: <ul style="list-style-type: none"> <li>identified trends supported by use of some mathematical processes</li> <li>presented the main points of the data clearly</li> </ul>
1	1–3	The student has: <ul style="list-style-type: none"> <li>listed some trends that can be identified in the presentation</li> <li>used every day (rather than technical) language</li> </ul>
0	0	No creditworthy material as described in bands 4 to 1.

### Indicative content:

- the areas which can be represented in graphs, for example, for each area analysed are:
  - customer requirements – already to be turned into table
  - food safety – complaint data, cooling temperature data, cooking time data, refrigeration data from the chillers
  - productivity – times taken to pack products, yields from the packaging data, weights of packs
  - quality – complaints data, taste panel data

**Note:** The out of tolerance results, corrective actions and errors or omissions, can be found in the supporting document, Appendix 1, labelled in each tab.

Criteria	Marks awarded
Identify out of tolerance results	<p>1 mark: correctly identified 2 out of tolerance results that breach the critical limit (hazard analysis and critical control points (HACCP) principles)</p> <p>2 marks: correctly identified 3 or 4 out of tolerance results that breach the critical limit (HACCP principles)</p> <p>3 marks: correctly identified 5 or 6 out of tolerance results that breach the critical limit (HACCP principles)</p> <p>4 marks: correctly identified 7 or 8 out of tolerance results that breach the critical limit (HACCP principles)</p> <p><b>(maximum 4 marks)</b></p>
Identify corrective actions for out of tolerance results	<p>1 mark: identified relevant and appropriate corrective action for 1 or 2 out of tolerance results that breach the critical limit (HACCP principles)</p> <p>2 marks: identified relevant and appropriate corrective action for 3 or 4 out of tolerance results that breach the critical limit (HACCP principles)</p> <p>3 marks: identified relevant and appropriate corrective action for 5 or 6 out of tolerance results that breach the critical limit (HACCP principles)</p> <p>4 marks: identified relevant and appropriate corrective action for 7 or 8 out of tolerance results that breach the critical limit (HACCP principles)</p> <p><b>(maximum 4 marks)</b></p>
Identify errors or omissions for further investigation	<p>1 mark: correctly identified between 1 and 4 errors/omissions in the data for further investigation</p> <p>2 marks: correctly identified between 5 and 8 errors/omissions in the data for further investigation</p> <p>3 marks: correctly identified between 9 and 12 errors/omissions in the data for further investigation</p> <p>4 marks: correctly identified between 13 and 16 errors/omissions in the data for further investigation</p> <p><b>(maximum 4 marks)</b></p>
Total marks	12 marks

### Content mapping:

K4.1: Where to collect food production data from in relation to:

- food safety
- food quality
- customer requirements

K4.2: How to interpret and analyse food production data

K4.3: How different applications, including spreadsheets, databases and data loggers, can be used to support the interpretation and analysis of food production data

S4.6: Create a spreadsheet to track production trends

S4.7: Input management data to track production trends, demonstrating digital critical literacy by ensuring confidentiality processes are followed to ensure safety, security and privacy (for example, when using screens to input data)

S4.8: Systematically organise data in order to track production trends

S4.9: Critically interpret the data, considering process and scale, and any out of tolerance results that breach the critical limit

## Task 2: continuous improvement opportunities

Criteria	Marks awarded
Describe continuous improvement opportunities	<p>2 marks for each relevant description of continuous improvement opportunities.  <b>(maximum 6 marks)</b></p> <p><b>Guidance:</b></p> <p>Award 1 mark only for each identified continuous improvement opportunity that does not fully describe the continuous improvement opportunity (for example, product yields could be increased may warrant 1 mark, and product yields could be increased if the efficiency of process X was improved may be 2 marks).</p>
Total marks	6 marks

### Indicative content

Continuous improvement opportunities could include:

- shelf life varies from customer to customer (beef casserole) (cost saving)
- packing times (productivity)
- yields can be increased
- packing weights are overweight (packing to average weights) (cost saving)
- timestamps are not correct (productivity/technological)

Band	Mark	Descriptor
4	10–12	The student has produced a valid and comprehensive assessment of technological solutions to reduce errors in data collection. The student systematically and comprehensively compared their advantages and disadvantages, and determined a hierarchy of possible solutions with justification, making realistic recommendations.
3	7–9	The student has produced a credible assessment of technological solutions to reduce errors in data collection. The student described their advantages and disadvantages, and explained the reasons for possible solutions, making realistic recommendations.
2	4–6	The student has described a technological solution that might reduce errors in data collection. The student identified an advantage and disadvantage, including a recommendation for improvement.
1	1–3	The student has listed a technological solution to reduce errors in data collection. The student made general statements/assertions (rather than occupational knowledge in context) about advantages, disadvantages, and ways of making improvements.

Band	Mark	Descriptor
0	0	No creditworthy material as described in bands 4 to 1.

### Indicative content

- example solutions
  - data loggers
  - check weighers
  - handheld devices
  - resource planning tools
- example advantages
  - more efficient
  - time saving
  - bespoke
  - secure
  - space saving
  - environmentally sound
  - live and accessible data
- example disadvantages
  - cost
  - user error
  - power could go down
  - resistance to change
  - training
  - less robust (than pen and paper)
  - system interruptions

### Content mapping:

K4.4: Why electronic resources planning systems (management information system) are used within the food and drink industry

K4.5: How trends in food production data can be used for continuous improvement within the food and drinks industry

## Performance outcome grid

<b>Task</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>Total</b>
<b>1</b>	0	0	0	24	24
<b>2</b>	0	0	0	18	18
<b>Total marks</b>	0	0	0	42	42
<b>% Weighting</b>	0%	0%	0%	100%	100%



## Document information

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## Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Post approval, updated for publication.		January 2021
v1.1	NCFE rebrand.		September 2021