

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"> extrapolated and interpreted relevant trends using industry standard mathematical processes to justify conclusions presented data clearly and logically using images and other tools (for example, graphs) as appropriate, using technically accurate language supported answers with information that is relevant, specific and precise
3	7–9	The student has: <ul style="list-style-type: none"> explained relevant trends, giving reasons for them, supported by appropriate mathematical processes presented data clearly with the use of some technically accurate language
2	4–6	The student has: <ul style="list-style-type: none"> identified trends supported by use of some mathematical processes presented the main points of the data clearly
1	1–3	The student has: <ul style="list-style-type: none"> listed some trends that can be identified in the presentation used every day (rather than technical) language
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 – goods in data, temperature data, allergens in products, refrigeration checks data
 - productivity – times taken to pack products, yields from the packaging data, weights of packs
 - quality – taste panel data
 - downtime may be shown in graphs to show time per day, or possibly by downtime type in bar chart form to show which is biggest cause of downtime
 - production plan may be broken down to show how many pizzas of each variant are planned to be made
 - quality weight checks may be presented as graphs, standard deviation may be used, or compared to scrap allowance and analyse how close/how much product is being given away on the pizzas, any anomalies (for

example, mushroom weight and premium ham) have weights at 2g whereas all other recordings are 20–25g, missing weights

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	1 mark: correctly identified 2 out of tolerance results 2 marks: correctly identified 3 or 4 out of tolerance results 3 marks: correctly identified 5 or 6 out of tolerance results 4 marks: correctly identified 7 or 8 out of tolerance results For example, out of tolerance weights, out of specification taste panel results, temperatures out of tolerance Note: out of tolerance in this scenario is identified through weights which are out of the % tolerance that giveaway is costed for (quality weight checks) (maximum 4 marks)
Identify corrective actions for out of tolerance results	1 mark: identified relevant and appropriate corrective action for 1 or 2 out of tolerance results that breach any defined limits 2 marks: identified relevant and appropriate corrective action for 3 or 4 out of tolerance results that breach any defined limits 3 marks: identified relevant and appropriate corrective action for 5 or 6 out of tolerance results that breach any defined limits 4 marks: identified relevant and appropriate corrective action for 7 or 8 out of tolerance results that breach any defined limits For example, out of tolerance weights, out of specification taste panel results, temperatures out of tolerance (maximum 4 marks)
Identify errors or omissions for further investigation	1 mark: correctly identified between 1 and 4 errors/omissions in the data for further investigation 2 marks: correctly identified between 5 and 8 errors/omissions in the data for further investigation 3 marks: correctly identified between 9 and 12 errors/omissions in the data for further investigation 4 marks: correctly identified between 13 and 16 errors/omissions in the data for further investigation For example, missing data, errors, missing investigation of out tolerance data (maximum 4 marks)

Criteria	Marks awarded
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. (maximum 6 marks)</p> <p>Guidance:</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 product to product (cost saving)
- reduce downtime risks (productivity)
- replace ingredients (productivity/cost saving)
- reduce production time through new equipment (productivity)
- reduce complaints (customer satisfaction)

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.

Band	Mark	Descriptor
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.
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
 - new sauce depositor
 - new belt
 - more quality checks
 - trial for longer shelf life
- example advantages:
 - more efficient
 - time saving
 - bespoke
 - secure
 - space saving
 - environmentally sound
 - live and accessible data
 - cheaper ingredients
- example disadvantages:
 - cost
 - user error
 - power could go down
 - resistance to change
 - training
 - less robust (than pen and paper)
 - system interruptions
 - time required for increased checks or trial time

- new equipment, unknown outcome
- reduced product quality

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

SAMPLE

Performance outcome (PO) grid

Task	PO1	PO2	PO3	PO4	Total
1	0	0	0	24	24
2	0	0	0	18	18
Total marks	0	0	0	42	42
% weighting	0	0	0	100	100

SAMPLE

Document information

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Owner: Head of Assessment Design

Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Additional sample material		01 September 2023
v1.1	Sample added as watermark	November 2023	21 November 2023