FDQ Ltd - Qualification Purpose and Structure

FDQ number	Qualification title	EPA Plan number	EQF Level	Review date
701-299	Level 3 End-point Assessment for Food and Drink Maintenance Engineer ST0195 QN 603/7298/9	ST0195/AP04	4	01/04/2026

Purpose overview

This End-point Assessment (EPA) qualification is designed for learners who have completed the on-programme training for the Food and Drink Maintenance Engineer standard apprenticeship. Successful completion of this EPA confers the correct level of knowledge, skills and behaviours specified in the apprenticeship standard, and contributes towards the achievement of the Level 3 Food and Drink Maintenance Engineer apprenticeship. FDQ provides an EPA statement of results but certification of the complete apprenticeship standard is provided by the Education and Skills Funding Agency (ESFA).

Regulation

The EPA qualification is externally quality assured by Ofqual.

Entry Requirements

Learners need to be 16 years old or over to take this qualification, employed or contracted in a workplace and enrolled on the Food and Drink Maintenance Engineer standard apprenticeship.

Prior to taking this EPA qualification, entrants should meet the Level 3 Food and Drink Maintenance Engineer gateway requirements as specified in the assessment plan:

- On and off the job training to develop knowledge, skills and behaviours as specified in the apprenticeship standard
- Achievement of a Level 3 Diploma in Food and Drink Engineering Maintenance
- Level 2 Mathematics
- Level 2 English

Qualification Content

This qualification tests the mandatory knowledge, skills and behaviours set out in the Food and Drink Maintenance Engineer standard including: core knowledge of maintenance approaches and techniques; operation of mechanical equipment in the food and drink industry; how to produce replacement components; performing routine first line mechanical maintenance, In addition, specialist knowledge and skills will be tested as appropriate for a role as either a mechanical or multi-skilled maintenance engineer.

Entrants will undergo three test components as detailed on the following pages, which must all be passed to achieve the apprenticeship. The apprentice is awarded a final grade of fail, pass, merit or distinction.

This qualification could lead to

This qualification will support progression to further learning in:

1. Subject areas including:

    - Food safety and quality
    - Team leading/management
    - Engineering procurement
    - Continuous improvement

2. Further qualifications including:

    - Level 4/5 Leadership and management

Qualification support

The Level 3 Food and Drink Maintenance Engineer standard and assessment plan has been developed by the Food and Drink Maintenance Engineer apprenticeship employer group and approved by the Institute for Apprenticeships; Ofqual has confirmed it will carry out external quality assurance of the EPA. The FDQ EPA qualification is supported by the Food and Drink Training and Education Council and a range of employers and training providers.

Further information

Further information can be obtained from our website at: http://www.fdq.org.uk/our-qualifications

Or by contacting FDQ:

Tel: 0113 859 1266

E mail: fdq@fdq.org.uk

Methods of Assessment

The qualification includes 3 assessment components, each of which must achieve a pass in order to pass the EPA requirement of the Level 3 Food and Drink Maintenance Engineer apprenticeship. Specifications for each of the assessment components are available on FDQ's secure system FDQAwards. Please contact FDQ's EPA team at epa@fdq.org.uk for more information.

Overall grading of the EPA qualification is fail, pass, merit or distinction, which is calculated from the combination of grades achieved in each of the three assessment instruments.

The three assessment instruments may be undertaken in any order within the three-month gateway period and assessment on each may be undertaken by a number of different independent examiners.

Assessment Components and Time Allowed

Level 3 EPA for Food and Drink Maintenance Engineer ST0195	
Component	**Possible grades**
Knowledge test	Fail/pass/merit/distinction
Practical tests	Fail/pass/merit/distinction
Professional Dialogue and Interview	Fail/pass/merit/distinction
Overall apprenticeship grading	Fail/pass/merit/distinction

Test structure		Time allowed
Written Knowledge Test (WKT)	30 multiple choice questions 5 extended answer questions	90 mins
Practical Tests (PT)	Workplace project (WP) Assessed observations (AO)	45-60 mins 3 x 60 mins
Professional Dialogue and Interview (PDI)	Question and answer	45 – 60 mins

Qualification scope

The qualification will assess the following knowledge, skills and behaviours:

		Assessment Method		
Standard Ref	Core Knowledge to be assessed	WKT	PT	PDI
K1	Food processing/manufacturing and product knowledge (to meet company requirements e.g. Dairy/Confectionery/Meat processing)	•		
K2	Legislation and regulations in the food and drink industry, including understanding of: • Food Safety • Health and Safety • Hazard Analysis Critical Control Point (HACCP), Threat Assessment Critical Control Point (TACCP), Vulnerability Assessment Critical Control Point (VACCP)	•		
K3	Basic principles of sustainability and environmental legislation	•		
K4	The impact of customer requirements and demands on the food supply chain	•		
K5	The key principles of cleaning and hygiene processes covering both Cleaning in Place (CIP) and cleaning out of place systems	•		
K6	The key principles of quality management systems and processes	•		
K7	The key principles of Continuous Improvement (CI) Management	•		
K8	Materials science, including the key features of raw materials, their uses in food production and types of equipment used to process them	•		
K9	Types of best practice maintenance approaches and techniques in the food and drink industry	•		
K10	The principles of fault-finding techniques	•		

K11	The operation of mechanical equipment in the food and drink industry	•		
K12	How to produce replacement components	•		
K13	The function of fluid power systems	•		
K14	The operation of heat exchange equipment	•		
K15	The principles of cutting and welding in the food and drink industry	•		
K16	Principles of electrical systems, including their uses, safety and legislation	•		
K17	Services and utilities knowledge, including the importance and impact of energy management and pollution control in food production	•		
Standard Ref	**Core Skills to be assessed**	**WKT**	**PT**	**PDI**
S1	Plan and prepare for maintenance of engineered systems in the food and drink industry		•	
S2	Perform first line routine mechanical maintenance, including removing and replacing components, cleaning, lubrication, inspection and fault finding		•	
S3	Apply 'best practice' techniques, including condition monitoring and proactive maintenance		•	
S4	Produce replacement components, using manual and machine processes		•	
S5	Maintain fluid power systems		•	
S6	Weld stainless steel and other materials used in food production equipment		•	
S7	Perform first line electrical maintenance, including testing, fault finding, repairing and replacing components		•	
S8	Apply mathematical techniques to solve engineering problems		•	

Standard Ref	Core Behaviours to be assessed	WKT	PT	PDI
B1	Safe working: ensures safety of self and others, food safe, challenges safety issues		•	
B2	Ownership of work: accepts responsibility, is proactive, plans work		•	
B3	Pride in work: integrity, aims for excellence, time management			•
B4	Self-development: links own objectives to support the business, seeks learning and development opportunities			•
B5	Integrity and respect: for colleagues, good communication with managers			•
B6	Working in a team: builds good relationships with others			•
B7	Problem solving: takes responsibility until a solution is reached, challenges others, works to solve root cause of problems			•
B8	Responsiveness to change: flexibility to changing environment and demands			•
B9	Company/industry perspective: knowledge of company and food industry, acts as an ambassador			•
B10	Effective communication: with colleagues/managers, in writing, visually, verbally			•
Standard Ref	**Additional KSBs to be assessed for Mechanical Food and Drink Maintenance Engineers**	**WKT**	**PT**	**PDI**
S9	Monitor mechanical equipment in food and drink operations		•	
S10	Repair and produce replacement complex mechanical components to required standards		•	
S11	Produce complex welded joints in a range of positions using a range of different processes		•	
S12	Review welding activities		•	

Standard Ref	Additional KSBs to be assessed for Multi-skilled Food and Drink Maintenance Engineers	WKT	PT	PDI
K18	Understand the principles of electrical machines, testing electrical equipment and circuits		•	
K19	Understand the operation of process controllers within an engineered system		•	
K20	Understand the requirements of electrical installations		•	
S13	Commission and perform maintenance of instrumentation/process control systems		•	
S14	Perform maintenance of programmable control systems		•	

Assessment Criteria

The three assessment components are assessed using the grading criteria on the following pages.

Assessment component	Assessment criteria
WKT	30 x multiple choice questions: 1 mark for each correct answer 5 x extended answer questions: up to 6 marks for each question Total available points for WKT = 60 Grade boundaries: Fail: 0-40 marks out of 60 Pass: 41-50 marks out of 60 Merit: 51-55 marks out of 60 Distinction: 56-60 marks out of 60
PT	The PT components (WP and AO) are marked holistically against the grading criteria below. Available grades: Fail/pass/merit/distinction Grade boundaries: Fail: less than 4 marks Pass: 4-6 marks Merit: 7-10 marks Distinction: 11-12 marks
PDI	The PDI is marked holistically against the grading criteria below. Available grades: Fail/pass/merit/distinction

Grading criteria for Practical Tests (PT)			
Practical element	Acceptable achievement (1 point per statement)	Commendable Achievement (2 points per statement)	Outstanding Achievement (3 points per statement)
Observations	Apprentice carries out maintenance activities in line with requirements of standard	Apprentice carries out maintenance activities effectively, in a logical and planned sequence, seeking ways to improve performance	Apprentice demonstrates effective improvement on current performance, suggesting improvements to standards or ways of working
Project Output	Project output demonstrates work in line with expected quality and requirements of the standard	Project output demonstrates work above the expected level of quality with demonstrable financial benefits	Project output demonstrates work at an outstanding level of quality with demonstrable financial benefits and efficiency savings which impact upon the business
Report	Report which clearly shows approach to planning, implementation and outcome of project	Report which makes recommendations for improvements and efficiency savings	Well-reasoned conclusions and sound/logical recommendations for future implementation linked to tangible business benefits
Delivery of presentation	Clear, articulate and accurate presentation of technical project elements and personal viewpoints within timescales allowed	Delivers presentation confidently; deals well with technical questioning; demonstrates effective listening skills	Dynamic and engaging presentation; adapts style to fully capture the attention of the audience using an appropriate selection and variation of presentation skills

Grading criteria for Professional Dialogue and Interview (PDI)		
Grade	Achievement	Description
Fail	Unacceptable	Apprentice falls short in one or more Behaviour areas
Pass	Acceptable	Apprentice shows appreciation of the behavioural aspects of the standard
Merit	Commendable	As above, plus seeks ways to improve performance
Distinction	Outstanding	As above, plus apprentice demonstrates effective improvement on current performance, suggesting, implementing and validating improvements to standards or ways of working

Specimen assessments

WKT multiple-choice example questions:

Question 1

Which of the following is the correct order of activities when conducting a risk assessment?

a. Establish, identify, evaluate, record, review
b. Identify, establish, evaluate, record, review
c. Evaluate, identify, record, eliminate, review
d. Identify, record, estimate, evaluate, review

Correct answer: b

Question 2

Which of the following pipes is least corrosion resistant?

a. Mild steel
b. Cast iron
c. Wrought iron
d. Stainless steel

Correct answer: d

Question 3

The maximum safe working pressure of acetylene is:

a. 25 psi (175 kPa)
b. 15 psi (100kPa)
c. 32 psi (220kPa)
d. 12 psi (83 kPa)

Correct answer: b

WKT example extended answer questions:

Question 1

List 6 factors affecting flow in a CIP system (1 mark for each correct answer)

Indicative answer

Changes in pipe diameter, pump, capacity, pipe run length, number of bends, leaks, blocked spray devices, T pieces and blank ends.

Question 2

The use of filtration in food and drink manufacture is a common process. List three types of filtration membrane and what they are used for (2 marks for each example and usage explanation).

Indicative answer

- Microfiltration - Separation of suspended solids (clarification). Removal of bacteria/viruses (Extended shelf-life products),

- Ultrafiltration - separation of proteins from the product as well as the concentration of proteins, starches and fats
- Nanofiltration - Sugar/salts concentration, detergent recovery, removal of herbicides and pesticides. Removal of BOD/COD loading of effluent.
- Reverse Osmosis - concentration of products (removal of water) or the recovery of water for use in the process or CIP's.

Example project brief:

Example Project Brief	
Project Title	Perdue 80:20 breakdown improvements.
Applicable role	Mechanical or multi-skilled maintenance engineer
Project Scope	Machine breakdowns can have a costly impact on the efficient running of any food and drinks manufacturing process. Using the Perdue 80:20 principle, select a breakdown issue and investigate the causes and make proposals for improvements. You should ○ Analyse data from production KPI's ○ Determine the root cause of the most prevalent issue using techniques such as fish bone, 5Ys techniques ○ Quantify losses, understand sources of losses ○ Make recommendations for improvements to the issue/process ○ Calculate the downtime costs ○ Justify the improvements. The report should include: ○ Information about how the project was planned and implemented ○ Consideration of its impact on resources, the environment, food safety, and health and safety ○ Methods used in working practices and implementation ○ The application of engineering principles ○ Data collection and its analysis and presentation ○ Savings and a discussion about longer term impact of implementation ○ Discussion and justifications for the outcomes achieved.
Output required	The project findings should be presented in a technical report of no more than 2000 words which describe how the project was planned, implemented, outcomes and results are discussed and conclusions drawn, which is presented to the independent assessor at the end of the assessment period.
Timing	The workplace project should be undertaken over a 12-week period where the report is handed in at week 11 and presented in week 12 of the end point assessment period.

Example observation specification:

Observation Brief - sample	
Focus of Observation	Investigation of gearbox or drive reducer problem
Job role	Mechanical maintenance
Tasks to be included	• Isolate and sign the equipment using correct lock off procedures • Removal of the gearbox from the equipment, • Cleaning and stripping down to investigate possible causes • Obtaining and fitting replacement parts or bearings • Rebuilding and refitting back onto the equipment • Testing and run up to full working state • Hand back to production • Completion of all relevant documentation and maintenance records.
KSBs to be covered	S1, S2, S3, S4, B1, B2, S9, S10
Timing	Approx. 1 hr

Example professional dialogue and interview questions:

Standard reference	Sample sets of questions – IEs will ask all questions within each set.
B4	**Self-development** **Main question:** Give an example of how you have driven your own development and understanding of your role. **Extension question:** How can you support others in learning new skills and understanding of the business? Give an example.
B6	**Working in a team** **Main question:** Give an example of how you have worked collaboratively in your role. **Extension question:** Describe the goals of your team. How can you ensure everyone contributes to their achievement?
B7	**Problem solving** **Main question:** How do you deal with problems? Give an example. **Extension question:** If you were constantly having a problem with the yield on a process, what would you do?
B8	**Responsiveness to change** **Main question**: Do you prefer to avoid change in your role? **Extension question:** If you were told that a new piece of equipment was to be introduced and you had to test it, how would you react?
B9	**Company/industry perspective** **Main question:** Explain the objectives of your business and how it compares to its competitors. **Extension question:** Give some examples of how you have improved your knowledge of the business and the wider food industry.
B10	**Effective communication** **Main question:** Describe an example of how you have communicated between colleagues. **Extension question:** If you had to carry out some essential maintenance on a line in the middle of a production run, how would you use your influencing skills to successfully achieve your goal?

Additional information and guidance

This specification should be read in conjunction with additional information relating to the EPA and Food and Drink Maintenance Engineer apprenticeship, which can be found in the following documents:

- Food and Drink Maintenance Engineer End-point Assessment Plan ST0195/AP04, available from https://www.instituteforapprenticeships.org/media/1421/food-and-drink-maintenance-engineer-assessment-plan.pdf

- Food and Drink Maintenance Engineer Apprenticeship Standard ST0195, available from https://www.instituteforapprenticeships.org/apprenticeship-standards/food-and-drink-maintenance-engineer/

- Food and Drink Maintenance Engineer Apprenticeship Standard – Employer and Training Provider Guide to End-point Assessment, available from epa@fdq.org.uk

FDQ has produced a number of guidance documents and specimen assessments to support apprentices, training providers and employers. Please contact epa@fdq.org.uk for further details.

Record of revisions to this document

Version	Description of change	Date