

Maintenance & Operations Engineering Technician Apprentice Guide

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1.0 Introduction

This handbook provides you with information about the end point assessment of the Maintenance & Operations Engineering Technician (MOET) standard. In this handbook, there are references to the Energy & Utilities Independent Assessment Services (EUIAS) Specification for MOET which contains more detailed information about the end-point assessment. It can be found on the EUIAS website at www.euias.co.uk.

You will be on one of seven pathways within this standard:

- Control and Instrumentation Technician
- Electrical Technician
- Mechanical Technician
- Electromechanical Technician
- Electrical Systems and Process Control Technician
- Plant Operations Technician
- Wind Turbine Technician

The end point assessment has been designed to meet the requirements of the Assessment Plan written by the group of employers that designed the standard. You can find a copy of the assessment plan here:

https://www.instituteforapprenticeships.org/media/1190/maintenance_and_operations_engineering_technician.pdf

2.0 What is End-Point Assessment (EPA)?

End-point assessment is the final assessment of the knowledge, skills and behaviours in this standard, and consists of:

- a multiple-choice knowledge assessment
- a practical observation
- a technical interview, supported by an evidence portfolio

You must pass these assessments to pass your apprenticeship. The assessments are taken at the very end of the on-programme phase of training when your employer and your training provider are satisfied that you have met the gateway criteria to undertake EPA.

You can achieve a **pass, merit or distinction**. EUIAS has been selected by your employer to carry out end-point assessment and it is our job to ensure that apprentices are assessed fairly.

EPA will be conducted in a 6-month window at the end of your apprenticeship and an apprenticeship certificate is claimed on your behalf after EPA is successfully completed. If

you do not pass a component of the EPA, you will have an opportunity to re-sit it, subject to the approval of your employer.

3.0 Gateway

Employers and training providers must satisfy themselves that you are ready for EPA and this done at a Gateway Review meeting.

The employer **must** conduct the meeting with you, supported by the training provider. During this review, you will have the opportunity to reflect on each part of the MOET standard to assure yourself that you are ready for EPA. You will also be asked to sign a Gateway Eligibility Report to confirm that you are ready.

You will also have to demonstrate that you have:

- Achieved a minimum Level 2 English
- Achieved a minimum Level 2 maths
- Completed the training programme, covering the requirements of the MOET standard
- Produced an evidence portfolio of evidence describing a range of activities you have carried out during the last 6 months of your apprenticeship, which you can use to support your technical interview; see section 8.3

4.0 End-Point Assessment Timescales

EPA must be completed within 6 months of entering gateway and begins on the day you take the knowledge test. Your employer and EUIAS will work together to ensure that each stage of your EPA is scheduled in advance of the completion date.

5.0 Who will assess you?

EUIAS will appoint assessors in advance of the planned date of EPA activity. All assessors have a minimum of 3 years' experience within the specialism they are assessing. All are fully trained by the EUIAS and understand the requirements for the MOET standard and assessment plan.

6.0 Grading Criteria

During the EPA, the assessor will award you a grade:

- Distinction
- Merit

- Pass
- Fail

The table below details the combinations of individual component grades and the overall final grade.

Knowledge Assessment Grade	Practical Observation Grade	Technical Interview Grade	Final grade
Pass, Merit or Distinction	Pass	Pass	Pass
Pass, Merit or Distinction	Pass or Merit	Pass	Pass
Pass, Merit or Distinction	Pass	Pass or Merit	Pass
Pass, Merit or Distinction	Merit	Merit	Merit
Pass, Merit or Distinction	Distinction	Merit	Merit
Pass, Merit or Distinction	Merit	Distinction	Merit
Pass	Distinction	Distinction	Merit
Merit or Distinction	Distinction	Distinction	Distinction

7.0 Re-sits/re-takes

If you fail one or more of the assessments within the six-month window, you may re-sit, at the discretion of your employer. Re-takes outside the six-month assessment window require you to undertake a period of further training, and to re-take all three of the assessments. Re-sits and re-takes will not be awarded a grade higher than a pass.


8.0 Stages of Assessment

MOET EPA has 3 stages of assessment. Each stage covers different knowledge, skills and behaviours within the standard. The MOET EPA Specification describes exactly which parts of the standard are assessed in each assessment method.

8.1 Stage 1 – Knowledge Assessment

An assessment with 30 multiple-choice questions, taken under examination conditions, the assessment duration is 45 minutes. The assessment covers the Core Knowledge elements of the standard.

Here's an example of a question.

Question 01		
When seen on site what does this sign warn of?		
Possible answers	Answer	
a) Corrosive material	X	
b) Hazardous material		
c) Hot material		
d) Flammable material		

The questions will cover the four areas listed below. You are strongly advised to revise all subject areas in advance of the assessment.

The questions are written for the apprenticeship standard, not for the particular job role that you have with your employer. For this reason, you may have questions that relate to plant or equipment that you do not use in your day-to-day job role. However, the questions will cover the areas that are expected to be covered in the apprenticeship training for a Maintenance and Operations Engineering Technician. Your training provider will ensure that your training covers these areas even if they are not covered in your specific job role.

You are recommended to take a practice knowledge assessment under exam conditions before your actual knowledge assessment.

First principles relating to the operation and maintenance of appropriate plant and equipment

Operating principles	Tolerances and specifications
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Relevant industry health and safety standards, regulations and regulatory requirements

Control of substances hazardous to health (COSHH) Working at height Risk assessment PPE Lifting & rigging	Isolation procedures Manual handling Site safety signage Confined space procedures Safe systems of work
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Maintenance and operational practices, processes and procedures covering a range of plant and equipment

Tools, equipment & materials Engineering calculations Testing & inspection Condition monitoring	Fault finding techniques Technical drawings Root cause analysis
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The relevant engineering theories and principles relative to their occupation

<p>Control and Instrumentation Technician:</p> <p>Principals of C&I equipment and systems including: Basic theories and principles of instruments Pressure measurement devices Temperature measurement devices Level measurement devices Flow measurement devices</p> <p>Mechanical Technicians:</p> <p>Principles of mechanical equipment and systems: Basic mechanical theories and principles Valves Pumps Filters Flange management and pipework</p>	<p>Electrical Technician:</p> <p>Principals of electrical equipment and systems: Basic theories and principles of electricity Motor Control Centres (MCCs) Motors Isolations and testing Cables, glands and fixings</p> <p>Electromechanical Technicians:</p> <p>Principles of electromechanical equipment and systems: Basic electromechanical terminologies and principles Mechanical movers Electrical devices</p>
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<p>Wind Turbine Technician:</p> <p>Principles of wind turbine equipment and systems: Basic theories and principles of wind turbines Gearboxes and coupling drives Associated electrical equipment Brake systems Pipework</p>	<p>Plant Operations Technician:</p> <p>Principals of plant operation equipment and systems: Process control Monitoring Equipment Isolation and testing</p>
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The grading is as follows:

Grade	Mark:
Fail	<18
Pass	18 - 22
Merit	23 - 25
Distinction	26 - 30

8.2 Stage 2 – Practical Observation

Stage 2 of EPA is a substantial practical observation observed by an assessor on site. You will be given a briefing on the scope of the activity you will be required to complete in advance of the actual practical observation. The practical observation will be carried out at a location you will be familiar with.

The practical observation assesses all the core skills, most of the behaviours and **one** of the specialist pathway skills from the standard. You should refer to the MOET Specification to make sure you are familiar with what is being assessed.

Note that the specialist pathway skill is chosen by your training provider as it relates to the specific task that you will be asked to complete.

The duration of the observation will take no longer than would be expected by a safe and competent technician to complete the same activity – typically 4 – 6 hours.

The assessor will observe you carrying out the task and ask you a range of questions about the activity. This will allow them to assess your underpinning knowledge. You should attempt to answer all questions in a clear and comprehensive manner, as this will potentially lead to higher marks being awarded.

8.3 Stage 3 – Technical Interview, supported by evidence portfolio

The final stage of the EPA is a technical interview, supported by your evidence portfolio. This is where you can discuss how you applied skills, knowledge and behaviours to work that you completed towards the end of your apprenticeship. This assessment is designed to cover **all** the knowledge and skills of the standard, plus one behaviour –critical reasoning.

Two assessors, both of whom will be occupationally competent in your specialist pathway, will conduct the technical interview. The interview will take approximately 2 hours. You may consult your evidence portfolio to support you when answering the questions.

The questions will cover all the skills and behaviours that are assessed by the Technical Interview and it is useful to think of the jobs in your portfolio as having three parts, each matching up with one of three scenarios.

Scenarios for the Electrical, Mechanical, Electromechanical and Wind Turbine Pathways are as follows:

- Scenario 1 - Position, assemble, install and dismantle plant and equipment
- Scenario 2 – Carry out planned, unplanned and preventative maintenance procedures
- Scenario 3 – Diagnose and determine the cause of faults and Replace, repair and/or remove components and ensure its return to operational condition

Scenarios for Control and Instrumentation and Electrical Systems and Process Control are as follows:

- Scenario 1 - Position, assemble, install and dismantle plant and equipment including calibration and configuration
- Scenario 2 – Carry out planned, unplanned and preventative maintenance procedures including calibration and configuration
- Scenario 3 – Diagnose and determine the cause of faults

Scenarios for Plant Operations are as follows:

- Scenario 1 – Carry out planned operating procedures on plant and equipment including handover and acceptance of responsibilities
- Scenario 2 – Monitoring the performance of plant and equipment
- Scenario 3 – Respond to contingencies

The assessor will ask you a set of questions to explore your levels of skills, knowledge and behaviours when completing activities in each scenario. You can support your answers with reference to your evidence portfolio.

Evidence portfolio

Your evidence portfolio should contain evidence of **typically 3-5 individual substantial maintenance tasks**. This will allow you to demonstrate to the assessors your consistent performance against the standard. It is highly recommended that you select activities that are both complex in nature and supported with products of daily work for example: Risk Assessment; Job Cards; Reports etc.

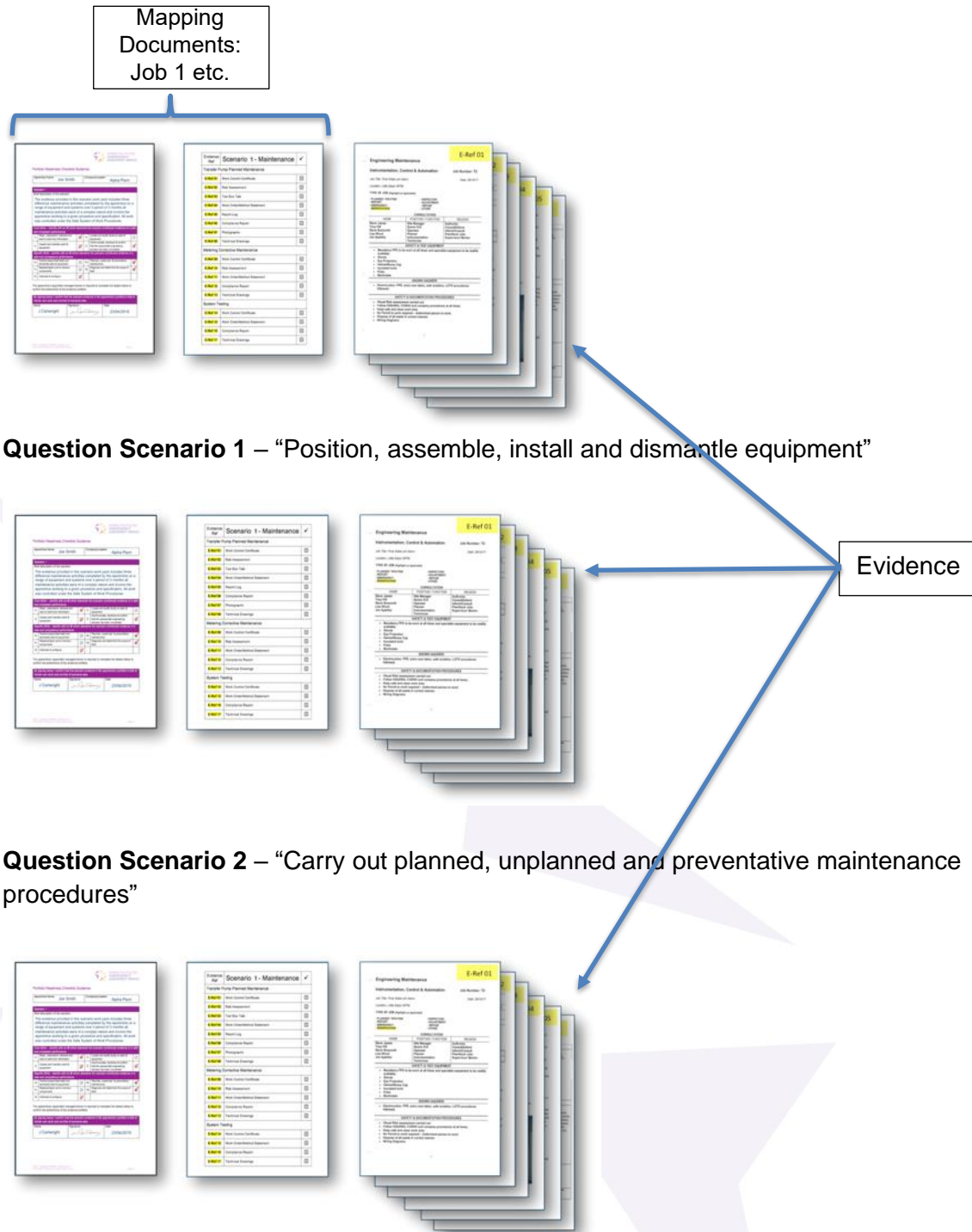
All your evidence must be authentic – produced by you and signed and dated by your supervisors to confirm the work is yours.

The evidence portfolio should showcase your best work, from the last 6 months of your apprenticeship. For each job, organise your evidence into three sections corresponding to the three different scenarios. Then carefully cross-reference the evidence in your portfolio to the different elements of the standard of the standard:

- To make it easier to find individual pieces of evidence
- To ensure that you have covered everything required and not missed anything

Your employer/training provider can assist you in mapping your evidence. EUIAS has developed a checklist and mapping document to help you cross-reference your evidence portfolio to the standard, which can be found in Section 7 of the MOET EPA Specification.

It is recommended that you structure your evidence for each job around the 3 scenarios, for example:



Evidence portfolios can be in paper or electronic formats.

Preparing for the Technical Interview

The technical interview is your time to showcase your skills, knowledge and behaviours from a range of complex work-based activities you have already completed.

You should select, with the support of your mentor/supervisor, suitable activities that allow you to talk fluently and comfortably about each of the question scenarios

It is recommended that you carry out a 'Mock Technical Interview' with your mentor/supervisor as this will allow you to familiarise yourself with the ways in which to articulate all aspects of your skills, knowledge and behaviours to the assessors. During this time with your mentor/supervisor you are encouraged to take notes that you can take into the interview to refer to if necessary.

9.0 Notification of EPA Outcomes

You will not be told the results of each separate assessment component at the time you take it because the results have to be checked and confirmed by EUIAS.

On completion of the knowledge assessment your employer will be sent your results within 5 working days.

The assessors will provide you with some feedback at the end of both the practical observation and technical interview. However, the actual results will be checked and confirmed by EUIAS, who will then conduct a final grade awarding meeting to confirm the overall result.

10.0 Certification

Certificates are applied for after final grading has taken place. EUIAS applies to the Education and Skills Funding Agency (ESFA) for your apprenticeship certificate on your behalf, using the details provided by your employer/training provider. The ESFA sends the certificates to your employer.