

**ELECTRICAL, ELECTRONIC PRODUCT SERVICE AND INSTALLATION
ENGINEER (LEVEL 3)**

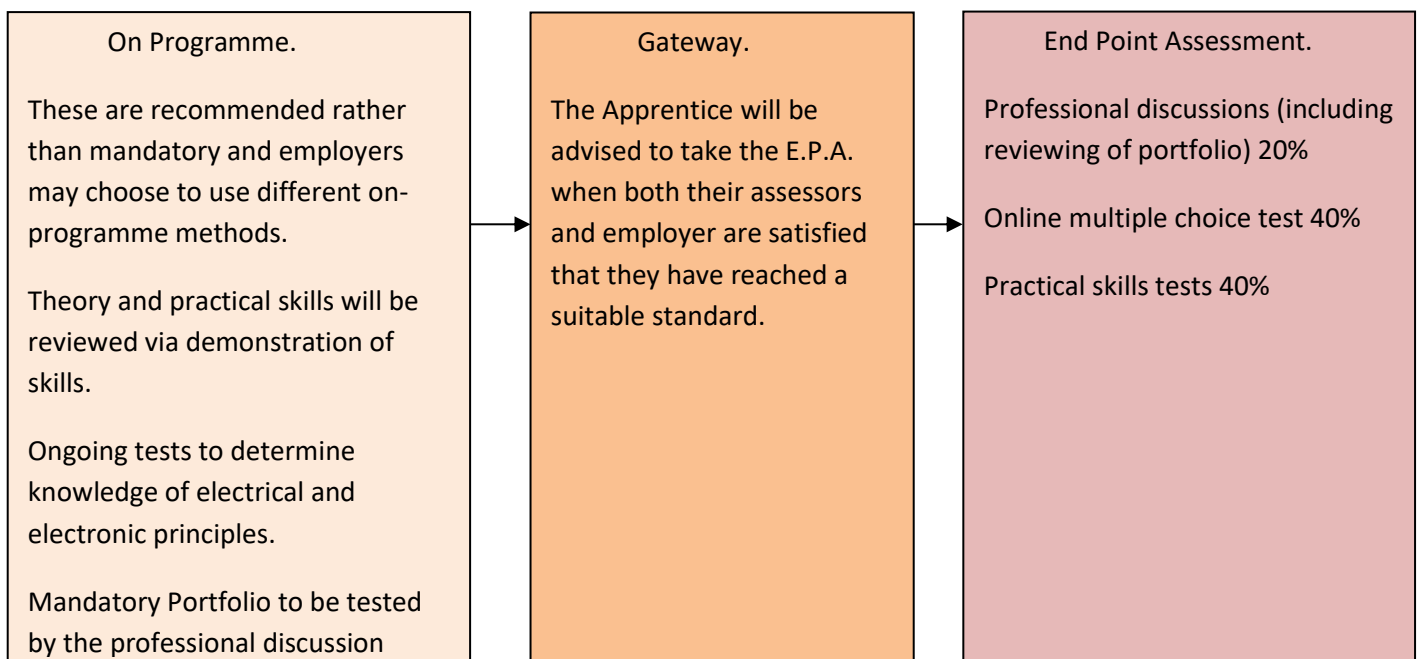
ASSESSMENT PLAN

Contents.

	page
Summary of Assessment.	2
Assessment Overview.	3
Assessment Gateway.	11
End-Point Assessment. (EPA)	12
Roles and Responsibilities.	13
Financial Considerations.	14

Summary of Assessment.

1. Professional discussion to test the portfolio, observations from skills test and behaviours.
2. Online multi choice tests will be used to assess the Apprentice's knowledge of electrical and electronics principles.
3. Practical skills tests.



Assessment Overview.

The skills assessment will be supervised by an independent end-point assessment organisation who will have not been involved in the Apprentice's training or have any conflict of interest.

The independent assessment organisation will be taken from the Education and Skills Funding Agency Register of End-Point Assessment Organisations (RoEPAO) and will be responsible for the final judgement. The independent assessor will have had no prior contact with the individual in terms of training the individual through the Apprenticeship and will be given guidance by the end-point assessment organisation.

On Programme

A Portfolio is mandated to enable employees to ensure that progress and elements that show competency can be collated throughout the On-Programme training and will be reviewed by Professional Discussion in the end point assessment.

It should include:-

- A briefing document of approximately 1500 words (minimum 1350 and maximum 1650) summarising research into the latest developments in both Health & Safety and Environmental Legislation.
- Photo and video evidence alongside job completion reports highlighting fault diagnosis and parts fitted for any jobs carried out.
- Documents that contribute to building a picture around the Apprentice's behaviours throughout the duration of the apprenticeship, made up of attendance records from the duration of the apprenticeship (one record from the training provider and one record from the employer).

Assessment Gateway.

The EPA should only commence once the employer is confident that the apprentice has developed all the knowledge, skills and behaviours defined in the apprenticeship standard.

Apprentices without English and mathematics at level 2 must achieve level 1 English and mathematics and take the test for level 2 prior to their EPA.

Apprentices must have compiled a portfolio containing evidence of work carried out under supervision with their employer that demonstrates the knowledge, skills and behaviours listed in Appendix 1.

End-Point Assessment.

The expected total duration of the EPA will take place over the course of two days. The end-point assessment organisation will dictate the exact breakdown of the structure. The table in Appendix 1 shows the behaviour, knowledge and skills shown in the Standard and how they will be assessed during the EPA

Practical Skills Test

There are four separate practical skills tests during the EPA that contribute to an overall Practical Skills score. There will be a choice of centres, agreed between the employer and the End-point Assessment Organisation, where the EPA can be taken. This enables the employer to select the centre that is most convenient and most cost effective. The practical tests will be on a role-play basis, with the assessor playing the role of the customer. It is expected that the Practical Skills Tests will take five hours in total with a typical duration of 60 – 75 minutes per test and will include:

- 1-2) Two '***fault diagnosis***' practical skills tests where the Apprentice will be expected to diagnose a fault to component level on a piece of equipment:

The Apprentice's understanding can be assessed in the following way;

- a) Asking relevant questions about the reported fault (15 marks)
- b) Carrying out the correct safe isolation procedure (15 marks)
- c) Carrying out the correct opening safety checks (15 marks)
- d) Using manufacturers technical information to aid diagnosis (10 marks)
- e) Using the correct diagnostic tools available (10 marks)
- f) Identifying the correct area of the product that the fault relates to (10 marks)
- g) Correctly identifying the faulty component (15 marks)
- h) Accurately recording the diagnostic process and test results (10 marks)

- 3) A practical skills test on the ***installation of a product*** demonstrating:
- (a) Pre-installation survey (15 marks)
 - (b) Referring to manufacturer' instructions (15 marks)
 - (c) Completion of all necessary safety checks (20 marks)
 - (d) Correct installation (20 marks)
 - (e) Functional test/s (10 marks)
 - (f) Explanation of correct function including energy saving features (10 marks)
 - (g) The connection to a wireless network (10 marks)
- 4) A practical skills test on the ***replacement of a faulty component*** to assess the Apprentice's knowledge of:
- (a) Safe Isolation (10 marks)
 - (b) Electrostatic discharge (15 marks)
 - (c) Manual handling (15 marks)
 - (d) Health and safety awareness (15 marks)
 - (e) Replacing components using appropriate tools and techniques (20 marks)
 - (f) Electrical safety checks (15 marks)
 - (g) Functional test/s (10 marks)

The marks for the four practical tests will be added together, divided by four and given a 40% weighting in the final score. The apprentice must pass the practical tests to be awarded an overall pass.

Grading Descriptors: Practical Skills Test

Fail (0-64%): Unable to demonstrate the ability to apply skills, knowledge and behaviours as required for this role. Unable to complete given tasks accurately or within timescales specified.

Pass (65-74%): Demonstrates the ability to consistently apply skills, knowledge and behaviours for this role. Selects equipment appropriate for each task. Applies electrical safety tests and avoids the hazard left by residual energy. Demonstrates an accurate interpretation of relevant legislation and guidance. Completes given tasks accurately and within the timescales specified, operating safely and in line with health & safety legislation.

Merit (75-89%): Meets pass criteria and completes each task in a logical and efficient manner and in under 60 minutes. Uses correct lifting techniques. Makes network connections including wi-fi, internet and Bluetooth. Leaves workplace and/or appliance in the same clean and tidy condition as at the start of the assessment.

Distinction (90-100%): Meets merit criteria and communicates clearly, politely and confidently with the customer; asking only relevant questions in relation to the appliance. Demonstrates the product to the customer's satisfaction ensuring the customer is able to operate the product. Completes product registration paperwork with customer. Shows leadership, taking control of the environment and the task at hand.

Professional Discussion.

The professional Discussion will be conducted after the Practical Skills Tests and will focus on the apprentice's understanding of installation and replacing components, paying particular attention to the following elements:

- (1) Health and safety regulations and practice.
- (2) Electrical and utility service requirements.
- (3) Carrying out electrical safety checks.
- (4) The manufacturer's installation requirements.
- (5) Health and safety issues.
- (6) Customer care.

The end-point assessment organisation will question the apprentice who will, using the contents of the portfolio to illustrate their answers if they wish, explain how they went about researching the topics for their briefing report, and what conclusions they came to. A discussion about the evidence provided to support behavioural characteristics will also be pursued during this interview/discussion.

The professional discussion will take approximately 60-75 minutes and be marked out of 100. The result will then be given a weighting of 20% in the final result. The end-point assessment organisation will provide two assessment staff for each discussion – a nominated Chair will have the final say if a dispute arises. The employer will not be present.

Grading Descriptors: Professional Discussion

Fail (0-64%): Unable to demonstrate the ability to apply skills, knowledge and behaviours as required for this role. Fails to demonstrate a theoretical knowledge underpinning work completed.

Pass (65-74%): Demonstrates the ability to apply skills, knowledge and behaviours outlined in appendix 1 for this method. Able to provide evidence of completing work to customer, company and manufacturer specifications. Demonstrates an understanding of the correct interpretation of legislation and guidance, especially in relation to health and safety and initial safety checks. Able to demonstrate an understanding of equipment used by explaining reasons behind tool selection.

Merit (75-89%): Meets pass criteria and displays a knowledge and understanding of how work impacts on others. Displays a knowledge of digital functions and connections including wi-fi, internet and Bluetooth. Able to show evidence of working unsupervised on some practical tasks.

Distinction (90-100%): Meets merit criteria and communicates with confidence and clarity. Able to show evidence of consistently working unsupervised and assisting others.

Online Multiple Choice Test.

The online multiple choice test to assess the Apprentice's knowledge of the importance of electrical and electronic principles in diagnosing faults will have 50 questions each will equal weighting of 2 points each. Each question will have 4 response answers. This will contribute to a 40% weighting in the final result. The duration is 90 minutes. The end-point assessment organisation will create the relevant question bank. This may take place on the employer premises or wherever relevant digital equipment is available under normal testing conditions.

Grading Descriptors: Online Multiple Choice Test

Fail: 0-64 points

Pass 65-74 points

Merit 75-89 points

Distinction 90-100 points

Final Grading

Example of maximum final result calculations.

Area to be tested	Maximum mark	Average mark for area	Weighting	Final mark
First fault diagnosis skills test.	100			
Second fault diagnosis skills test.	100			
Installation skills test	100			
Replacing component skills test	100			
Total	400	100	40%	40

Professional Discussion	100			
Total	100	100	20%	20
Principles online test		100	40%	40
Final total				100

The four grades, Fail, Pass, Merit and Distinction follow the previous industry pattern. The Pass mark will be 65% - 74%, 75% - 89% will achieve a Merit and 90% - 100% a Distinction. In order to pass the EPA the apprentice must achieve at least a pass mark in all three assessment methods.

The scores for the 3 methods will be aggregated and then weighting will be applied to determine the final grade.

An Apprentice who passes will not be allowed to retake the EPA to try and increase their grade. If a candidate has to retake the EPA for extenuating circumstances then the new grade will stand. The end-point assessment organisation will determine the criteria for extenuating circumstances.

End Point Final Judgement

The End-point Assessment Organisation will have the final say in respect of the scoring and grading of each Apprentice.

Roles and Responsibilities.

Responsibilities	Employer	Training Organisation	End-Point Assessment Organisation	Institute for Apprenticeship
On-programme learning	Provide support and technical guidance			
Passing through gateway to EPA	Decides that Apprentice has reached the agreed standard			
EPA practical tests and professional discussion.			Provide the invigilators to oversee the test, mark the scripts and have the final say on the result and grade. Source relevant venues to be agreed with the employer	Provide external quality assurance
EPA internal quality assurance			Provide internal quality assurance including validation and moderation meetings.	
EPA external quality assurance				Provide external quality assurance
EPA Multiple Choice Test			Confirm that the Apprentice has passed the required online multiple choice test	Provide external quality assurance

Internal Quality Assurance

The assessment methods described above are designed to produce assessment outcomes that are consistent and reliable, allowing fair and proper comparison between Apprentices employed in different sectors and sizes of organisations. The processes described in this section are designed to ensure consistent application of the assessment process.

The End-point Assessment Organisation will be responsible for developing a range of assessment tools that provide reliable and objective assessment across each of their assessors. Assessors should have at least five years' FTE sector knowledge and experience together with D32/D33 or equivalent.

The end-point assessment organisation should undertake validation and moderation meetings as required but at least twice a year to ensure consistency of marking and grading. This should be attended by all independent assessors, technical experts and panel members to ensure consistency.

All assessment and quality assurance organisations will be asked to sample a minimum of 10% of EPAs carried out by their organisation. This will be a full review that covers all 3 methods for an individual apprentice.

External Quality Assurance

The Institute for Apprenticeships will provide the external quality assurance.

Implementation

Considerable thought has been given to designing a cost effective EPA that will easily fit within 10% - 15% of the total budget. The multiple choice test will be carried out on line, which is the most cost effective method. The EPA will be carried out at centres, agreed between the End-point Assessment Organisation and the employer for ease of travel and cost. The designated centres should be able to test a sufficient number of Apprentices at the same time to provide a cost-effective system.

We estimate that 750 Apprentices p.a. will be taking the Apprenticeship.

Appendix 1 – Areas to be assessed by each method

(K) = Knowledge

(S) = Skill

(B) = Behaviour

Assessment Method	Areas to be assessed	Elements of standard
Professional discussion	Demeanour (B) Friendly manner (B) Communication skills (S) Customer care (K) Willingness to continue learning (B) Honesty and integrity (B)	Giving a good impression of their employer and themselves by being polite and appropriately dressed. Having a friendly greeting and manner to colleagues and customers Identify and use the appropriate mode of communication and be able to deal with and listen to customers. Customer care techniques including any particular company policies. Continuing 'personal professional development' in an industry that is changing rapidly. Developing a trusting relationship with customers and colleagues.
Multiple choice on line tests	Health and safety (K, S) Environmental Legislation (K) Principles of Servicing Electrical and Electronic Products (K)	Health & safety regulations and practices relevant to the role. Environmental legislation that is current and appropriate to installations and repairs. Testing to EU/BS Product Standards. (oven internal temperature & surface temperature tests).
Practical skills test	Health and safety (K, S) Transporting and Protecting Electrical and Electronic Products (S) Installing, Testing and Handling Over Electrical and Electronic Products (S) Diagnosing Faults and Repairing Electrical and Electronic Products (K, S) Connectivity (S) Principles of Servicing Electrical and Electronic Products (K, S)	Apply electrical safety tests. Avoid the hazard left by residual energy (ESD). Ensure all tools and equipment are safe and fit for purpose. Apply EU/BS product standards. Use the correct lifting techniques. Apply safe stowing procedures. Fit / remove transit bolts, devices as applicable. Agree suitable site, with customer, for installation. Carry out electrical safety tests. Install product to manufacturer's regulations. Apply the appropriate electrical, electronic & software principles to understanding the nature and reason for faults.

	<p>Environmental Legislation (K, S)</p> <p>Showing respect (B)</p> <p>Having concern (B)</p> <p>Customer care procedures and techniques. (K, S)</p>	<p>Make network connections including WiFi, Internet and blue tooth. Demonstrate product to customer's satisfaction ensuring customer can operate product. Complete paperwork including product registration if agreed with customer.</p> <p>Showing respect for customer's property and possessions.</p> <p>Having concern for the safety of colleagues, customers, their family and pets.</p> <p>Identify and use the appropriate mode of communication and be able to deal with and listen to customers.</p> <ul style="list-style-type: none"> • Comply with health and safety procedures to protect colleagues, customers and their family. • Resolve disputes and know who to report to in case of problems <p>Apply environmental legislation that is current and appropriate to the installation or repair. Advise customers on energy saving practices and choosing environmentally friendly purchases in the future.</p>
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