



Part of the
Enginuity Group

Qualification Manual

EAL Level 3 Diploma in Electrical Installation
Qualification Number: 600/9331/6

Issue 7

www.eal.org.uk



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1.0 About EAL

For over fifty years, EAL has been the specialist awarding organisation for engineering, manufacturing, building services and related sectors. Developed to the highest technical standards, our qualifications reflect ever-changing industry and regulatory needs. We support the providers of our qualifications with an unparalleled level of service to ensure that learners are well prepared to take the next step in their journeys, whether study, an apprenticeship or work.

Through industry partnerships with EAL centres and training providers, decades of experience supporting our core sectors, and our role as part of the Enginuity Group, we have built unrivalled knowledge and understanding of employer skills needs. As a result, EAL's skills solutions, including apprenticeship End-Point Assessment, External Quality Assurance and qualifications are respected and chosen by employers to deliver real lifelong career benefits for all our learners. That's why in the last ten years, 1.2 million people across the UK have taken EAL qualifications.

1.1 Equal Opportunities and Diversity

EAL expects its centres to enable learners to have equal access to training and assessment for qualifications in line with equalities legislation. Further details can be located in the EAL Equal Opportunities and Diversity Policy:

<http://www.eal.org.uk/centre-support/centre-support/policies-and-important-documents>

1.2 Customer Experience and Feedback

Customer Experience is a fundamental part of EAL's commitment to you. EAL aims to ensure that all customers receive a high-quality efficient service. We are always interested in feedback and if you have any comments or feedback on our qualifications, products or services, please contact the Customer Experience team:

EAL Customer Experience

Tel: +44 (0)1923 652 400

Email: Customer.Experience@eal.org.uk

2.0 Introduction to the Qualification

What is this qualification about?

This qualification allows the learner to acquire advanced underpinning knowledge and related skills of electrical installation. It does not require occupational evidence from the workplace, so is suitable for learners who currently do not work within the electrical Industry (but may wish to do so). The qualification has been adapted from the Diploma within the apprenticeship framework; therefore successful completion of the qualification facilitates progression to an Industry recognised qualification.

It provides the learner an opportunity to practice and be assessed in a secure environment on the installation and testing of electrical equipment together with the relevant theory of electrical installation to the current edition of the wiring regulations. The learner has the opportunity to utilise BS 7671 within some of the units and also acquire the relevant understanding of electrical science and principles.

The qualification will not automatically make the individual an electrician but will facilitate progression to an industry recognised qualification.

Who is this qualification for?

learners who currently do not work within the electrical Industry (but may wish to do so), those who wish to develop their understanding and skills of electrical installation.

What does this qualifications cover?

The qualification has mandatory and optional units. The mandatory units cover electrical installation design, environmental technology systems, electrical science and principles, electrical installation craft, inspection, testing, commissioning; and diagnosing and correcting electrical faults.

The optional units cover overseeing and organising the work environment, requirements of BS 7671 and, small scale solar photovoltaic systems.

The qualification also has integral health and safety in some of the units applicable to the topic being studied.

All units for this qualification are listed in Section 3 of this manual. The learner must complete 6 mandatory units in order to achieve the qualification. The qualification has a minimum of 459 Guided Learning Hours (GLH) and a minimum of 49 credits. It has a Total Qualification Time (TQT) 491 hours (this is notational time required by the learner to complete the qualification).

This qualification:

- is regulated at level 3,
- is not recognised by the electrical industry for competence and will not make the learner an electrician, but will facilitate a progression to an industry recognised qualification,
- is supported by NFEC (National Forum of Engineering Centres),
- on successful completion will provide the learner with 32 UCAS points on the new UCAS points system. (Note that A level grade A* gets 56 points under the new Tariff, in comparison with 140 under the previous Tariff).

2.1 Qualification Support Materials

The following materials are available for this qualification:

- Qualification Units: these contain the learning outcomes and assessment criteria
- Practical and Theory Assignments.

All EAL materials can be accessed from EAL Online Services.

2.2 Achievement of the Qualification

This qualification is gained when all the necessary units have been achieved. The centre will then be able to apply for the learner's certificate. The learner will also receive a Certificate of Unit Credit, listing all the units they have achieved.

However if they don't manage to complete the full qualification learners can still claim a Certificate of Unit Credit for the units achieved therefore, they still have proof of their ability and could complete the qualification at a later date.

Overall grading type: Pass (or Fail)

3.0 Qualification Structure

3.1 Rule of Combination

This qualification will be obtained by the learner once they have completed the mandatory pathway and a unit from the optional selection. The qualification has a minimum of 49 credits and 459 GLH. It has a Total Qualification Time (TQT) 489 hours (this is notional time required by the learner to complete the qualification). The Units highlighted in grey are common to the Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment).

Mandatory Units:

EAL Code	Unit Title	Level	GLH	Ofqual Code
QELTK3/002	Understanding environmental legislation, working practices and the principles of environmental technology systems	3	36	M/602/2525
ELEC3/04A	Electrical Installation Planning, Preparing and Designing	3	85	M/504/4899
ELEC3/05	Electrical Installation Craft Skills	3	56	M/504/9312
QELTK3/006	Understanding the principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment	3	78	D/602/2567
QELTK3/007	Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment	3	58	R/602/2579
ELEC3/08B	Electrical Science and Principles	3	111	A/504/8292

Optional Units: One unit must be completed:

QELTK3/003	Understanding the practices and procedures for overseeing and organising the work environment (electrical installation)	3	56	J/602/2532
18ED3-02	Understand the Requirements of Electrical Installations BS 7671:2018 (2022) (please see note about this unit in Appendix 3)	3	35	K/650/1450
QET3/002SPV	Know the requirements to install, commission and handover small scale solar photovoltaic systems	3	35	D/602/3086
QPAT3/001A	In-Service Inspection and Testing of Electrical Equipment PAT	3	35	K/505/0183

4.0 Centre and Qualification Approval

Centres wishing to run these qualifications will need to comply with the Qualification Manual and EAL's centre recognition criteria for this qualification upon accreditation and launch. Centres must also put in place the appropriate physical and human resources and administration systems to effectively run the qualification.

For *existing* EAL Centres to put these qualifications on your centre remit:

- To add this Qualification to your Centre Qualification remit, create and complete a Qualification Approval Application form in Smarter Touch and submit to EAL.

For *non* EAL Centres to gain centre approval to run these qualifications:

- Please contact the EAL Customer Experience Department who will be delighted to hear from you:

Tel: +44 (0)1923 652 400

Email: Customer.Experience@eal.org.uk

5.0 Profiles and Requirements

5.1 Staff Responsible for Registering and Certification of Learners

Centres are required to appoint a suitable member of staff who can take responsibility for registering learners onto qualifications, submitting entries for assessments to EAL, and taking receipt of external assessment procedures (if appropriate). They may also be responsible for applying to EAL for learner certificates. The role may be undertaken by the same person who undertakes quality assurance.

5.2 Teaching Staff

These personnel must have the necessary knowledge and understanding of the assessment criteria and learning outcomes they are delivering. They must also understand the structure and content of the qualification.

It is a recommendation that the teaching staff will:

- have 2 years' experience in teaching/training,
or
- are working towards an appropriate teaching/training qualification (e.g., Cert Ed or Learning & Development trainer units),
or
- hold an appropriate teaching/training qualification (e.g., Cert Ed or Learning & Development trainer units).

5.3 Learners

There are no formal entry requirements for this qualification, although Centres should ensure that the learners have the potential to achieve the units selected within this qualification. Learners must have the minimum levels of literacy and numeracy to comply with the health and safety aspects of the scheme, the completion of the learning outcomes and the external assessment.

Centres should make learners with particular requirements aware of the practical and theory content of the qualification and they should be given every opportunity to complete all or some of the units. EAL will consider any reasonable suggestions for and from, those with disabilities that would help them to achieve the learning outcomes without compromising the standards required.

Age Restrictions

Learners must be at least 16 years of age.

5.4 Assessors

Personnel carrying out assessment must have:

- knowledge and understanding of the assessment criteria they are assessing.
- knowledge and understanding of the qualifications structure and content, and an understanding of the assessment process.

It is a recommendation that personnel carrying out assessment will be working towards or have achieved A1 or A2 standards and continue to practice to those standards.

For units QELTK3/006 and QELTK3/007 these particular requirements apply:

Assessor must:

- be working towards or have achieved A1 or A2 standards and continue to practice to those standards,
or
- will have achieved D32 or D33 or TQFE/TQSE and possess CPD evidence of practicing to A1 or A2 standards,
or
will have other suitable equivalent assessor qualifications which apply the principles of the A1/A2 Standards.

Assessors must either be able to demonstrate that they are registered and up-to-date with their registration with an appropriate approved industry registration body or have one or more of a relevant occupational qualification (see example list below) to ensure that they can be regarded as occupationally competent in terms of assessing or verifying this qualification, and units therein.

NVQs/SVQs at the appropriate level or their equivalents in the Qualifications and Credit Framework:

- Electrotechnical Services (Installation - Buildings & Structures)
- Electrotechnical Services (Electrical Maintenance)

Assessors and verifiers who have relevant qualifications pre-NVQ and post-NVQ which are not competence-based must provide verifiable evidence that they are occupationally competent. This evidence must demonstrate that the assessor/verifier has up-to-date knowledge of the industry/occupation.

Assessor Continuing Professional Development (For units QELTK3/006 and QELTK3/007):

The occupational competence of assessors must be updated on a regular basis and be periodically reconfirmed with Continuing Professional Development (CPD) via the assessment centre. This will be quality assured by EAL.

It is the responsibility of each assessor to identify and make use of opportunities for CPD, such as industry conferences, access to trade journals, Professional Body/Trade Association events, at least on an annual basis to enhance and upgrade their professional development

and technical knowledge. It is imperative that records are kept of all such CPD opportunities/occasions and that they provide evidence of cascading such technical knowledge and industry intelligence to all relevant colleagues.

5.5 Internal Quality Assurers

For all units except QELTK3/006 and QELTK3/007:

The Internal Quality Assurer (IQA) must have knowledge and understanding of the qualification's structure and content. They must also understand the assessment process and the role of quality assurance.

It is a recommendation that the quality assurance staff will:

- Have experience in quality management/internal verification or
- Hold an appropriate qualification (e.g. V1).

For units QELTK3/006 and QELTK3/007 these particular requirements apply:

The IQA is also required to have a minimum of occupational experience evidenced by having a building services engineering sector related qualification or proven sector competence/experience plus access to relevant "occupational expertise" to enable them to conduct their role as internal verifier appropriately. This evidence and access to "occupational expertise" is quality assured by EAL.

IQAs must:

- be working towards or have achieved the V1 Standard and continue to practice to that standard; or have achieved D34 and possess CPD evidence of practicing to the V1 Standard.
- demonstrate an understanding of the assessment process.

IQA Continuing Professional Development

The occupational experience of internal verifiers must be updated on a regular basis and be periodically reconfirmed with CPD via the assessment centre. This will be quality assured by EAL.

It is the responsibility of each internal verifier to identify and make use of opportunities for CPD, such as industry conferences, access to trade journals, and Professional Body/Trade Association events, at least on an annual basis to enhance and upgrade their professional development and technical knowledge. It is imperative that records are kept of all such CPD opportunities/occasions.

5.6 Staff Invigilating On-Screen Examinations

These personnel must:

- have experience in conducting and controlling exam sessions
or
- be supervised, conducting this function, by an individual experienced in conducting and controlling exam sessions
- have knowledge, understanding and compliance to EAL examination procedures 'Procedures for Conducting the Exam Component within EAL Qualifications' (EAF 1), see website.

A tutor/assessor who has prepared the learners for the subject of the exam must not be the sole supervisor at any time during an exam for the subject.

6.0 Assessment

6.1 Introduction

The assessment of the qualification's units involves onscreen exams and theory and practical assessments. Practical assessment contributes to approximately 25% of the assessments within the qualification. The pass mark for all exams is notionally set at 60%. Grading for the assessments: Pass/Refer.

EAL Code	Unit Title	Onscreen Exam	Centre marked Assignment/ Practical
QELTK3/002	Understanding environmental legislation, working practices and the principles of environmental technology systems	Yes - 20 Q onscreen exam	No
ELEC3/04A	Electrical Installation Planning, Preparing and Designing	Yes - 25 Q on-screen exam open book: BS 7671, IET On-Site-Guide, also permitted: Electrician's Guide to Good Electrical Practice (Unite Union Book)	Yes Theory Assignment
ELEC3/05	Electrical Installation Craft Skills	No	Yes Practical Assignment
QELTK3/006	Understanding the principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment	Yes - 40 Q onscreen exam	Yes Practical Assignment

QELTK3/007	Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment	Yes - 45 Q onscreen exam	Yes Practical Assignment
ELEC3/08B	Electrical Science and Principles <i>(See notes on ELEC3/08B specification in Appendix 2 on updated assessments)</i>	Yes - 30 Q onscreen exam	Yes Theory Assignment
Optional units (One unit must be completed):			
QELTK3/003	Understanding the practices and procedures for overseeing and organising the work environment (electrical installation)	Yes - 45 Q on-screen exam	No
18ED3/02	Understand the Requirements of Electrical Installations BS 7671:2018 (2022)	Yes - 60 Q onscreen exam open book: BS 7671 Only*.	No
QET3/002SPV	Know the requirements to install, commission and handover small scale solar photovoltaic systems	Yes - 45 Q onscreen exam	No
QPAT3/001A	In-Service Inspection and Testing of Electrical Equipment PAT	Yes - 40 Q onscreen exam open book: IET Code of Practice for In-service Inspection and Testing of Electrical Equipment	Yes - Practical Assignment

Please note:

- the assessment must be undertaken by the learner under controlled conditions and the internal assessment must be delivered and invigilated by the centre in accordance with EAL's exams procedures
- Centres are responsible for ensuring that assessment decisions are valid and reliable
- the internal assessment is accompanied by a marking criteria and other assessment material to ensure that the delivery team is consistent amongst learners with assessments
- internal assessment must be available to the EAL EQA upon request
- exam test specifications for the exams are in the Appendix
- the centre marked assessments are available from the EAL Website
- Learners must pass all the relevant assessments to achieve the qualification
- EAL will monitor and externally verify the internal and external assessments conducted at the centre
- a non-programmable calculator is required for all exams and theory assessments.

7.0 Quality Control of Assessments

There are two major activities in which EAL interacts with the Centre in relation to the External Quality Control of Assessment for this qualification and these are:

- **Recognition:** when a centre decides to offer the qualification, the EAL External Quality Assurer (EQA) ensures that the centre is suitably equipped and prepared for delivery and assessment.
- **Engagement:** throughout the on-going delivery of the qualification EAL, through EQA monitoring and other mechanisms will review the quality and consistency of assessment and internal quality assurance and recommend actions to address issues of concern.

Recognition

In granting approval, EAL, normally through its EQA's, will ensure that the prospective Centre:

- meets any procedural requirements specified by EAL
- has sufficient and appropriate physical and staff resources
- meets relevant health and safety and/or equality and access requirements
- has a robust plan for the delivery, assessment and QA for the qualifications (including, where appropriate, scope for involving employers).

EAL may decide to visit the centre to view the evidence provided.

Engagement

EAL, through EQA Engagement and other mechanisms will ensure that:

- a strategy is developed and deployed for the on-going monitoring of the centre – this will be based on an active risk assessment of the centre, and will include details of the learner, assessor and IQA's sampling strategy and the rationale behind this
- the centre's internal quality assurance processes are effective in learner assessment
- outcomes of internal assessment are verified, through sampling, to ensure standards are being maintained
- sanctions are applied to a centre where necessary and that corrective actions are taken by the centre and monitored by the EQA
- reviews of EAL's external auditing arrangements are undertaken.

Appendix 1: Unit Summaries

Unit: QELTK3/002: Understanding environmental legislation, working practices and the principles of environmental technology systems

Unit Summary

This knowledge unit enables learners to understand environmental legislation, working practices and the principles of environmental technology systems. Its content is the knowledge needed by a learner to underpin the application of skills and working practices appropriate to relevant legislation and systems.

Summary of Learning Outcomes

The learner will:

1. Understand the environmental legislation, working practices and principles which are relevant to work activities.
2. Understand how work methods and procedures can reduce material wastage and impact on the environment.
3. Understand how and where environmental technology systems can be applied.

Unit: ELEC3/04A: Electrical Installation Planning, Preparing and Designing

Unit Summary

This unit provides the learner an opportunity to acquire an understanding of electrical design and preparation together with how regulations and requirements affect the planned electrical installation. It aims to provide a facility of assessment and learning of electrical installation planning, preparing and designing.

Summary of Learning Outcomes

The learner will:

1. Understand how to plan for the installation of wiring systems and equipment.
2. Understand protection against overcurrent.
3. Understand earthing and protection.
4. Understand the electrical design procedure.
5. Understand how to prepare the worksite.

Unit: ELEC3/05: Electrical Installation Craft Skills**Unit Summary**

This unit provides the learner an opportunity to develop their practical skills relevant to electrical installation work. It covers preparation, installation and verification. It aims to promote the health and safety of the learner carrying out these electrical craft skills. It also provides a facility of learning and assessment of electrical installation craft skills in complex systems.

Summary of Learning Outcomes

The learner will:

1. Be able to prepare for electrical installation.
2. Be able to install wiring to complex systems.
3. Be able to verify the installation.

Unit: QELTK3/006: Understanding the principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment**Unit Summary**

This unit enables learners to understand principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment in accordance with statutory and non-statutory regulations and requirements. Its content is the knowledge needed by a learner to underpin the application of skills for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment. NOTE: Given the safety-critical nature of this topic it is a requirement that learners will have their knowledge consolidated by the use of “Practical Support Learning” activity in simulated conditions.

Summary of Learning Outcomes

The learner will:

1. Understand the principles, regulatory requirements and procedures for completing the safe isolation of an electrical circuit and complete electrical installations in preparation for inspection, testing and commissioning.
2. Understand the principles and regulatory requirements for inspecting, testing and commissioning electrical systems, equipment and components.
3. Understand the regulatory requirements and procedures for completing the inspection of electrical installations.
4. Understand the regulatory requirements and procedures for the safe testing and commissioning of electrical installations.
5. Understand the procedures and requirements for the completion of electrical installation certificates and related documentation.

Unit: QELTK3/007: Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment**Unit Summary**

This Unit aims to provide learners with the knowledge and understanding of the principles, practices and legislation associated with diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment in accordance with statutory and non-statutory regulations and requirements. Its content is the knowledge needed by a learner to underpin the application of skills used for fault diagnosis and correction in electrotechnical systems and equipment in buildings, structures and the environment. NOTE: Given the safety-critical nature of this topic it is a requirement that learners will have their knowledge consolidated by the use of “Practical Support Learning” activity in simulated conditions.

Summary of Learning Outcomes

The learner will:

1. Understand the principles, regulatory requirements and procedures for completing the safe isolation of electrical circuits and complete electrical installations.
2. Understand how to complete the reporting and recording of electrical fault diagnosis and correction work.
3. Understand how to complete the preparatory work prior to fault diagnosis and correction work.
4. Understand the procedures and techniques for diagnosing electrical faults.
5. Understand the procedures and techniques for correcting electrical faults.

Unit: ELEC3/08B: Electrical Science and Principles**Unit Summary**

This unit provides the learner an opportunity to acquire an understanding of science and principles relevant to electrical work. It aims to provide a facility of assessment and learning of electrical science and principles.

Summary of Learning Outcomes

The learner will:

1. Understand the mathematical methods which are appropriate to electrical science and principles.
2. Understand the principles of electronic components and devices in electrotechnical systems.
3. Understand the principles of alternating current circuits.
4. Understand the principles and applications of luminaires.
5. Understand the principles and applications of direct current machines and alternating current motors.
6. Understand the operating principles of electrical components.
7. Understand the principles of electric heating.

Unit: QELTK3/003: Understanding the practices and procedures for overseeing and organising the work environment (electrical installation)

Unit Summary

This knowledge unit enables learners to understand practices and procedures for overseeing and organising the work environment for the installation of electrotechnical systems and equipment. Its content is the knowledge needed by a learner to underpin the application of skills for overseeing and organising the work environment.

Summary of Learning Outcomes

The learner will:

1. Understand the types of technical and functional information that is available for the installation of electrotechnical systems and equipment.
2. Understand the procedures for supplying technical and functional information to relevant people.
3. Understand the requirements for overseeing health and safety in the work environment.
4. Understand the requirements for liaising with others when organising and overseeing work activities.
5. Understand the requirements for organising and overseeing work programmes.
6. Understand the requirements for organising the provision and storage of resources that are required for work activities.

Unit: 18ED3-02: Understand the Requirements of Electrical Installations BS 7671:2018 (2022)

Unit Summary

This unit gives the learner an understanding of the full content of BS 7671:2018 Amendment 2, and how this applies to electrical installations within its scope.

Summary of Learning Outcomes

The learner will:

1. Understand the scope, object and fundamental principles of BS 7671.
2. Understand the definitions used within BS 7671.
3. Understand how to assess the general characteristics of electrical installations.
4. Understand requirements of protection for safety for electrical installations.
5. Understand the requirements for selection and erection of equipment for electrical installations.
6. Understand the requirements of inspection and testing of electrical installations.
7. Understand the requirements of special installations or locations as identified in BS 7671.
8. Understand the information contained within Part 8 and the appendices of BS 7671.

Unit: QET3/002SPV: Know the requirements to install, commission and handover small scale solar photovoltaic systems

Unit Summary

This unit enables learners to develop the underpinning knowledge required prior to progressing to assessment of occupational competence. The unit focuses upon the knowledge required to plan and prepare for, install (including testing and commissioning) and handover of grid connected solar photovoltaic systems with an electrical output of up to 5 kilowatt peak (kWp) connected to both single and three-phase installations. The unit also includes fundamental design awareness and component selection outcomes but does not include detailed design.

Summary of Learning Outcomes

The learner will:

1. Know the health and safety risks and safe systems of work associated with solar photovoltaic system installation work
2. Know the requirements of the relevant regulations/ standards relating to practical installation, testing and commissioning activities for solar photovoltaic system installation work
3. Know the fundamental differences between A.C and D.C circuits within solar photovoltaic systems
4. Know the purpose of solar photovoltaic system components
5. Know the types, silicon characteristics and typical conversion efficiencies of solar photovoltaic modules
6. Know the fundamental design principles used to determine solar photovoltaic system module array size and position requirements
7. Know the preparatory work required for solar photovoltaic system installation work
8. Know the layouts and the requirements for installing solar photovoltaic module arrays
9. Know solar photovoltaic system D.C and A.C circuit installation layouts within the scope of the relevant Engineering Recommendation for grid tied systems
10. Know solar photovoltaic system protection techniques and components
11. Know the requirements to test and commission solar photovoltaic systems
12. Know the requirements to handover solar photovoltaic systems.

Unit: QPAT3/001A: In-Service Inspection and Testing of Electrical Equipment PAT

Unit Summary

This unit aims to provide learners with the knowledge and understanding to enable them to undertake practical inspection and testing of electrical equipment. Given the safety-critical nature of this topic it is a requirement that learners will have their knowledge consolidated by the use of “Practical Support Learning” activity in simulated conditions.

Summary of Learning Outcomes

The learner will:

1. Understand the statutory and non-statutory requirements relevant to the management of electrical equipment maintenance.
2. Understand the electrical units of measurement associated with in-service inspection and testing of electrical equipment.
3. Understand how equipment construction and classification reduces the risk of electric shock.
4. Understand the procedures for the in service inspection and testing of electrical equipment.
5. Understand how to carry out combined inspection and testing.
6. Understand the information contained in documentation in-service inspection and testing of electrical equipment.
7. Be able to inspect and test items of electrical equipment.

Appendix 2: Centre Examination Specifications

<p>Unit QELTK3/02 - Understanding environmental legislation, working practices and the principles of environmental technology systems</p> <p>Test Specification</p> <p>A non-programmable calculator is required</p> <p>Number of questions: 20 Time allowed: 40 minutes Pass mark normally: 60%</p> <p>Each test will cover the knowledge learning outcomes of the unit as follows:</p>	
Knowledge learning outcome:	Approximate coverage:
1.0 Understand the environmental legislation, working practices and principles which are relevant to work activities	35%
2.0 Understand how work methods and procedures can reduce material wastage and impact on the environment	15%
3.0 Understand how and where environmental technology systems can be applied	50%

Unit ELEC3/04A Electrical Installation Planning, Preparing and Designing

Test Specification

A non-programmable calculator is required

Number of questions: 25
Time allowed: 45 minutes
Pass mark normally: 60%

This is an open book exam requiring reference to BS 7671, the IET On-Site guide.
Also permitted: Electrician's Guide to Good Electrical Practice.

Each test will cover the knowledge learning outcomes of the unit as follows:

Knowledge learning outcome:	Approximate coverage:
1.0 Understand how to plan for the installation of wiring systems	36% + Assignment 04A
2.0 Understand protection against overcurrent	12% + Assignment 04A
3.0 Understand earthing and protection	20% + Assignment 04A
4.0 Understand the electrical design procedure	Assignment only 04A
5.0 Understand how to prepare the worksite	32%

Unit QELTK3/06 - Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment

Test Specification

A non-programmable calculator is required

Number of questions: 40
Time allowed: 80 minutes
Pass mark normally: 60%

Each test will cover the knowledge learning outcomes of the unit as follows:

Knowledge learning outcome:	Approximate coverage:
1.0 Understand the principles, regulatory requirements and procedures for completing the safe isolation of an electrical circuit and complete electrical installations in preparation for inspection, testing and commissioning	15% + Practical Assignment 06
2.0 Understand the principles and regulatory requirements for inspecting, testing and commissioning electrical systems, equipment and components	7% + Practical Assignment 06
3.0 Understand the regulatory requirements and procedures for completing the inspection of electrical installations	13% + Practical Assignment 06
4.0 Understand the regulatory requirements and procedures for the safe testing and commissioning of electrical installations	55% + Practical Assignment 06
5.0 Understand the procedures and requirements for the completion of electrical installation certificates and related documentation	10%

Unit QELTK3/07 - Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment

Test Specification

A non-programmable calculator is required

Number of questions: 45
Time allowed: 90 minutes
Pass mark normally: 60%

Each test will cover the knowledge learning outcomes of the unit as follows:

Knowledge learning outcome:	Approximate coverage:
1.0 Understand the principles, regulatory requirements and procedures for completing the safe isolation of electrical circuits and complete electrical installations	13% + Practical Assignment 07
2.0 Understand how to complete the reporting and recording of electrical fault diagnosis and correction work	7%
3.0 Understand how to complete the preparatory work prior to fault diagnosis and correction work	38%
4.0 Understand the procedures and techniques for diagnosing electrical faults	22% + Practical Assignment 07
5.0 Understand the procedures and techniques for correcting electrical faults	20%

Level 3 – ELEC3/08B – Electrical science and principles

Test Specification

A non-programmable calculator is required

Number of questions: 30
Time allowed: 60 minutes
Pass mark normally: 60%

Each test will cover the knowledge learning outcomes of the unit as follows:

Knowledge learning outcome:	Approximate coverage:
1.0 Understand the mathematical methods which are appropriate to electrical science and principles	7% (+Assignment 08B)
2.0 Understand the principles of electronic components and devices in electrotechnical systems	13% (+Assignment 08B)
3.0 Understand the principles of alternating current circuits	23% (+Assignment 08B)
4.0 Understand the principles and applications of luminaires	17% (+Assignment 08B)
5.0 Understand the principles and applications of direct current machines and alternating current motors	23% (+Assignment 08B)
6.0 Understand the operating principles of electrical components	7% (+Assignment 08B)
7.0 Understand the principles of electric heating	10% (+Assignment 08B)

Unit QELTK3/03 Understanding the practices and procedures for overseeing and organising the work environment (Electrical Installation)

Test Specification

A non-programmable calculator is required

Number of questions: 45
Time allowed: 90 minutes
Pass mark normally: 60%

Each test will cover the knowledge learning outcomes of the unit as follows:

Knowledge learning outcome:	Approximate coverage:
1.0 Understand the types of technical and functional information that is available for the installation of electrotechnical systems and equipment	22%
2.0 Understand the procedures for supplying technical and functional information to relevant people	18%
3.0 Understand the requirements for overseeing health and safety in the work environment	7%
4.0 Understand the requirements for liaising with others when organising and overseeing work activities	20%
5.0 Understand the requirements for organising and overseeing work programmes	20%
6.0 Understand the requirements for organising the provision and storage of resources that are required for work activities	13%

Unit QET3/002SPV Know the requirements to install, commission and handover small scale solar photovoltaic systems

Test Specification

A non-programmable calculator is required

Number of questions: 45
Time allowed: 90 minutes
Pass mark normally: 60%

Each test will cover the knowledge learning outcomes of the unit as follows:

Knowledge learning outcome:	Approximate coverage:
1.0 Know the health and safety risks and safe systems of work associated with solar photovoltaic system installation work	4%
2.0 Know the requirements of the relevant regulations/ standards relating to practical installation, testing and commissioning activities for solar photovoltaic system installation work	5%
3.0 Know the fundamental differences between a.c and d.c circuits within solar photovoltaic systems	4%
4.0 Know the purpose of solar photovoltaic system components	7%
5.0 Know the types, silicon characteristics and typical conversion efficiencies of solar photovoltaic modules	11%
6.0 Know the fundamental design principles used to determine solar photovoltaic system module array size and position requirements	11%
7.0 Know the preparatory work required for solar photovoltaic system installation work	4%
8.0 Know the layouts and the requirements for installing solar photovoltaic module arrays	25%
9.0 Know solar photovoltaic system d.c and a.c circuit installation layouts within the scope of the relevant Engineering Recommendation for grid tied systems	4%
10 Know solar photovoltaic system protection techniques and components	5%
11 Know the requirements to test and commission solar photovoltaic systems	16%
12 Know the requirements to handover solar photovoltaic systems	4%

Unit QPAT3/001A In-Service Inspection and Testing of Electrical Equipment PAT

Test Specification

This is an open book exam allowing use of: IET Code of Practice for In-service Inspection and Testing of Electrical Equipment

A non-programmable calculator is required

Number of questions: 40
Time allowed: 80 mins
Pass mark normally: 60%

Each test will cover the knowledge learning outcomes of the unit as follows:

Knowledge learning outcome:	Approximate coverage:
1.0 Understand the statutory and non-statutory requirements relevant to the management of electrical equipment maintenance	12.5%
2.0 Understand the electrical units of measurement associated with in-service inspection and testing of electrical equipment	5%
3.0 Understand how equipment construction and classification reduces the risk of electric shock	22.5%
4.0 Understand the procedures for the in service inspection and testing of electrical equipment	17.5%
5.0 Understand how to carry out combined inspection and testing	32.5%
6.0 Understand the information contained in documentation for in-service inspection and testing of electrical equipment	10%

PLEASE NOTE: all new registered learners will work toward the 18th Edition Amendment 2 version of this qualification and will be working toward unit Unit 18ED3/02. Please see the informative note in Appendix 3 in relation to pathway transferring.

Unit 18ED3/02 Understand the Requirements of Electrical Installations BS 7671:2018 (2022) Test Specification	
A non-programmable calculator is required	
Assessment type: Multiple choice Number of questions: 60 Time allowed: 120 minutes Pass mark normally: 60%	
<p>This is an open book exam requiring reference to IET Wiring Regulations Eighteenth Edition to Amendment 2, published by the Institute of Engineering and Technology.</p> <p>The examination will cover the learning outcomes of the unit as follows:</p>	
Knowledge learning outcome:	Approximate coverage:
1.0 Understand the scope, object, and fundamental principles of BS7671	7%
2.0 Understand the definitions used within BS 7671	3%
3.0 Understand how to assess the general characteristics of electrical installations	10%
4.0 Understand requirements of protection for safety for electrical installations	25%
5.0 Understand the requirements for selection and erection of equipment for electrical installations	23%
6.0 Understand the requirements of inspection and testing of electrical installations	7%
7.0 Understand the requirements of special installations or locations as identified in BS 7671	17%
8.0 Understand the information contained within Part 8 and the appendices of BS 7671	8%

Appendix 3: Learner Registration and Certification

Learners must be registered with EAL on a code which relates to the qualification – this must be completed prior to assessment. Both learner registration and certification can be completed online at the EAL Website www.eal.org.uk. For paper based registration and certification use the appropriate forms. These are located on the EAL Website, for guidance on registration and certification please refer to the Registration and Certification User Guide. To register the learner on the chosen unit code:

To register the learner on the chosen qualification/pathway code:

Qualification Title	Code
EAL Level 3 Diploma In Electrical Installation	600/9331/6C

Please note that the updated registration code with the 'C' suffix applies to all new registrations for Amendment 2 of BS 7671:2018.

Any learners registered prior to this change will be working toward the earlier version of this qualification which has an 18th Edition optional unit to Amendment 1.

Learners can be transferred by the Centre from the previous version of this qualification to the Amendment 2 version by completing a 'pathway transfer'. Instructions on how to do transfer a learner pathway can be found within the EAL Hub's Help Centre:

- EAL Hub > Help Centre > Online Services > Learner Pathway Transfer.

For further information please contact EAL Customer Experience +44 (0)1923 652 400.



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