

Level 3 NVQ Diplomas Electrotechnical Technology (2357)

Candidate logbook



www.cityandguilds.com
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Candidate logbook

Version and date	Change detail	Section
V3.0 January 2013	<ul style="list-style-type: none">• Included range, where relevant, as per Qualification Handbook• Took off grey colouring in table cells that were shaded in error	Units
V4 January 2014	<ul style="list-style-type: none">• Amended total credits for 2357-23 from 104 to 103	Units
V4.1	<ul style="list-style-type: none">• Corrected numbering for assessment criteria in LO 4	Unit 317

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1 About your candidate logbook

1.1 Contact details

Candidate name	
Candidate enrolment no	
Centre name	
Centre number	
Programme start date	
Date of registration with City & Guilds	

Keep a record of relevant contact details in the space provided below. You may find it helpful to make a note of phone numbers and e-mail addresses here.

Your Assessor(s)	
Your Internal Quality Assurer	
Quality Assurance Contact	

1 About your candidate logbook

1.2 Introduction to the logbook

This logbook will help you complete units in the:

- **City & Guilds Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment) (2357-13) 501/2232/0**
or the
- **City & Guilds Level 3 NVQ Diploma in Installing Electrotechnical Services (Electrical Maintenance) (2357-23) 501/1624/1.**

It contains forms you can use to record your evidence of what you have done.

There are 31 units in total available in these qualifications. You should discuss and agree with your assessor/tutor which of these units you are going to work towards. The units in this logbook are for the Level 3 qualification.

About City & Guilds

City & Guilds is your awarding body for this qualification. City & Guilds is the UK's leading awarding body for vocational qualifications.

Information about City & Guilds and our qualifications is available on our website **www.cityandguilds.com**.

2 Units

To achieve the **City & Guilds Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment) (2357-13) 501/2232/0**, learners must achieve **104** credits from the mandatory units below.

Unit accreditation number	Unit number	Unit title	Mandatory / optional for full qualification	Credit value
H/602/2523	301	Understanding health and safety legislation, practices and procedures (Installing and maintaining electrotechnical systems and equipment)	Mandatory	6
M/602/2525	302	Understanding environmental legislation, working practices and the principles of environmental technology systems	Mandatory	4
J/602/2532	303	Understanding the practices and procedures for overseeing and organising the work environment (Electrical Installation)	Mandatory	6
A/602/2561	304	Understanding the principles of planning and selection for the installation of electrotechnical equipment and systems in buildings, structures and the environment	Mandatory	8
T/602/2560	305	Understanding the practices and procedures for the preparation and installation of wiring systems and electrotechnical equipment in buildings, structures and the environment	Mandatory	10
J/602/2563	306	Understanding the principles, practices and legislation for the termination and connection of conductors, cables and cords in electrical systems	Mandatory	9
D/602/2567	307	Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment	Mandatory	8

R/602/2579	308	Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment	Mandatory	6
A/602/2589	309	Understanding the electrical principles associated with the design, building, installation and maintenance of electrical equipment and systems	Mandatory	12
R/602/2596	311	Applying health and safety legislation and working practices (Installing and maintaining electrotechnical systems and equipment)	Mandatory	3
H/602/2599	312	Applying environmental legislation, working practices and the principles of environmental technology systems	Mandatory	3
K/602/2605	313	Overseeing and organising the work environment (Electrical installation)	Mandatory	3
R/602/2792	315	Planning, preparing and installing wiring systems and associated equipment in buildings, structures and the environment	Mandatory	6
H/602/2828	316	Terminating and connecting conductors, cables and flexible cords in electrical systems	Mandatory	4
K/602/2703	317	Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment	Mandatory	6
M/602/2704	318	Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment	Mandatory	6
R/602/2503	399	Electrotechnical Occupational competence (AM2)	Mandatory	4

To achieve the **City & Guilds Level 3 NVQ Diploma in Installing Electrotechnical Services (Electrical Maintenance) (2357-23) 501/1624/1** learners must achieve **103** credits from the units below, **all** of which are mandatory.

Unit accreditation number	Unit number	Unit title	Mandatory / optional for full qualification	Credit value
H/602/2523	301	Understanding health and safety legislation, practices and procedures (Installing and maintaining electrotechnical systems and equipment)	Mandatory	6
M/602/2525	302	Understanding environmental legislation, working practices and the principles of environmental technology systems	Mandatory	4
J/602/2563	306	Understanding the principles, practices and legislation for the termination and connection of conductors, cables and cords in electrical systems	Mandatory	9
D/602/2567	307	Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment	Mandatory	8
R/602/2579	308	Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment	Mandatory	6
A/602/2589	309	Understanding the electrical principles associated with the design, building, installation and maintenance of electrical equipment and systems	Mandatory	12
R/602/2596	311	Applying health and safety legislation and working practices (Installing and Maintaining Electrotechnical Systems and Equipment)	Mandatory	3
H/602/2599	312	Applying environmental legislation, working practices and the principles of environmental technology systems	Mandatory	3
K/602/2605	313	Overseeing and organising the work environment (Electrical Installation)	Mandatory	3
H/602/2828	316	Terminating and connecting conductors, cables and flexible cords in electrical systems	Mandatory	4

K/602/2703	317	Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment	Mandatory	6
M/602/2704	318	Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment	Mandatory	6
M/602/2542	321	Understanding the practices and procedures for overseeing and organising the work environment (electrical maintenance)	Mandatory	6
J/602/2594	322	Understanding the practices and procedures for planning and preparing to maintain electrotechnical systems and equipment	Mandatory	8
T/602/2591	323	Understanding the practices and procedures for maintaining electrotechnical systems and equipment	Mandatory	8
L/602/2709	332	Plan and prepare to maintain electrotechnical systems and equipment	Mandatory	3
A/602/2706	333	Maintain electrotechnical systems and equipment	Mandatory	4
R/602/2503	399	Electrotechnical occupational competence (AM2)	Mandatory	4

3 The assessment process

Assessment requirements for electrotechnical competence-based qualifications - April 2012

Foreword

1. The assessment requirements detailed in this document are applicable to the Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment) and Level 3 NVQ Diploma in Electrotechnical Services (Electrical Maintenance), referred to as “The Qualification” throughout the document.
2. Assessment Requirements for the identified “Performance Units” must be in accordance with the Summit Skills’ Consolidated Assessment Strategy for Units and Qualifications of “Occupational Competence” in the Qualifications and Credit Framework (England, Northern Ireland and Wales) for the Building Services Engineering Sector, April 2010,v2.1a (06.10)
3. In accordance with the “Fit-for-purpose” design of “The Qualification” candidates should be assessed on competence activities which are expected of a competent Electrician, who installs, inspects and tests electrotechnical systems and equipment in commercial, industrial and “residential” premises.
4. These assessment requirements will be introduced and implemented from **02 April 2012**
5. These assessment requirements will be reviewed between:
September – December 2013
September – December 2014

Assessment of the scope/range identified in the performance units:

Sources of Evidence/Assessment Requirements

(Unit 312) ELTP02: Applying environmental legislation, working practices and the principles of environmental technology systems

The purpose of the unit is to enable the candidate to provide knowledge of environmental aspects upon activities and potential renewable environmental technology possibilities. The scope would be relevant to the work-site at which the assessment of providing knowledge takes place.

- Assessment of applying and imparting knowledge by an assessor should take place through “Professional Discussion/Assignment” with the candidate in the workplace, as to how they would impart the relevant knowledge to customers and clients.
- LO1 and LO2: Auditable evidence sourced from a real working environment must be provided to illustrate that the candidate has demonstrated over a minimum of two separate activities, they can apply environmental legislation and working practices appropriate to the installation of electrotechnical systems and equipment

- LO3 - Auditable evidence sourced from the workplace must be provided to illustrate that the candidate has demonstrated over a minimum of two separate activities, they can interpret and supply information on the operating principles of the identified environmental technology systems.

Note: EVs will be made aware by the AOs that this is **not** a practical assessment, but **must** be recorded as auditable evidence for verification purposes

(Unit 313) ELTP03: Overseeing and organising the work environment (Electrotechnical)

1. The purpose of the unit is to enable the candidate to demonstrate they can apply the knowledge relevant to implementing practices and procedures for overseeing and organising the work environment for the installation of electrotechnical systems and equipment.
2. Assessment of implementing practices and procedures for overseeing and organising the work environment by an assessor should take place through “Professional Discussion/Assignment” with the candidate in the workplace, as to how they would implement practices and procedures for overseeing and organising the work environment
3. LO1 to 6 - Auditable evidence sourced from the workplace must be provided to illustrate that, the candidate has demonstrated over two separate activities they can implement practices and procedures for overseeing and organising the work environment for the installation of electrotechnical systems and equipment.

Note: EVs will be made aware by the AOs that this is **not** a practical assessment, but **must** be recorded as auditable evidence for verification purposes

(Unit 316) ELTP05: Terminating and connecting conductors, cables and flexible cords in electrical systems

Auditable evidence sourced from a real working environment must be provided to illustrate that the learner has demonstrated over a minimum of two separate activities, they can terminate and connect, the conductors and cables identified in the awarding organisation’s assessment guidance for each of the learning outcomes.

Types of cable:

- i. Thermosetting insulated cables including flexes
- ii. Single and multicore thermoplastic (PVC)
- iii. PVC/PVC flat profile cable
- iv. SWA cables (XLPE, PVC)
- v. Fire resistant cable
- vi. MICC (with and without PVC sheath)
- vii. Armoured/braided flexible cables and cords
- viii. Data cables
- ix. Fibre optic cable

A candidate **must** provide evidence of the “Termination and Connection” of **7 from the 9** types of cables listed, of which:

- 4 **must** be sourced from practical activities in the workplace and
- 3 can be generated in simulated conditions

Note: The selection of the three types of cable to be terminated and connected in simulated conditions **must** be carried-out in consultation with, and endorsed by, the learner’s employer. This endorsement **must** be in writing and auditable.

Simulated Assessment: Electrotechnical Competence-Based Qualifications

1. There **must** be a signed statement from the candidate’s employer (An identified person with relevant authority) that the scope/range of a unit will not be attainable through the candidate’s work – this statement and associated simulation **must** be provided in the last **six** months of the candidates learning/assessment programme as their work circumstances, and therefore opportunities to gather evidence, may change if provided at the beginning. A record of this statement **must** be externally verified.
2. If the candidate’s “performance” is assessed in simulated conditions, this **must** reflect a Real Working Environment as defined in the Summit Skills’ Consolidated Assessment Strategy for Units and Qualifications of “Occupational Competence” in the Qualifications and Credit Framework (England, Northern Ireland and Wales) for the Building Services Engineering Sector, April 2010,v2.1a (06.10), and the “performance assessment” **must be supported by auditable evidence of supplementary questioning** related to performance in the real work place. This questioning and answers **must** have an audit trail and be externally verified.
3. The Delivery/Assessment Centre of “The Qualification” **must** notify their External Verifier of any planned simulated assessment, including date of the assessment, at least 21 days before the assessment takes place
4. **Permissible Simulation:** Simulated assessment can take place in those rare circumstances where the opportunities to collect naturally occurring evidence are limited or absent and the learner lacks evidence for completion of the unit. However, this scenario is anticipated to be rare in relation to the qualifications and the units to which this strategy applies given the inherent flexibility of the evidence-gathering process.
5. **Mandatory Simulation:** Simulated assessment of “Occupational Competence” **must take** place for industry identified key-safety critical aspects of “The Qualification” as listed in Section 4 of the “Consolidated Assessment Strategy” identified in 2 above, - i.e. Safe Isolation; Risk Assessment and Safe Working Practices; Termination and Connection as appropriate; Inspection, Testing and Commissioning; Diagnosing and Correcting faults – in an independent assessment structure as defined in the “Consolidated Assessment Strategy” identified in 2 above
6. The personnel undertaking assessment and verification of simulated assessment activity must meet the requirements of Annex 2 of the Summit Skills’ Consolidated Assessment Strategy for Units and Qualifications of “Occupational Competence” in the Qualifications and Credit Framework (England, Northern Ireland and Wales) for the Building Services Engineering Sector, April 2010,v2.1a (06.10),

The permissible simulated assessment facility

1. Must provide for the planning, preparation, installation and termination/connection of:
 - i. Thermosetting insulated cables including flexes
 - ii. Single and multicore thermoplastic (PVC)
 - iii. PVC/PVC flat profile cable
 - iv. SWA cables (XLPE, PVC)
 - v. Fire resistant cable
 - vi. MICC (with and without PVC sheath)
 - vii. Armoured/braided flexible cables and cords
 - viii. Data cables

2. Must provide for the planning, preparation and installation of:
 - i. Conduit (PVC)
 - ii. Conduit (Metallic)
 - iii. Trunking (PVC)
 - iv. Trunking (Metallic)
 - v. Cable Tray
 - vi. Cable Basket

3. Must meet the definitions in Summit Skills' Consolidated Assessment Strategy for Units and Qualifications of "Occupational Competence" in the Qualifications and Credit Framework (England, Northern Ireland and Wales) for the Building Services Engineering Sector, April 2010,v2.1a (06.10) for:
 - Simulation and Simulated Conditions: A controlled assessment only environment in which simulated activities take place involving the replication of a real working environment. The criteria for which must be to supply fit-for-purpose tools, equipment, full-size components, realistic deadlines and other commercial requirements.
 - Real Working Environment: An environment in which real work activities take place under real working conditions in keeping with real commercial situations

4. The "Simulated Assessment Facility" must meet the specification as agreed by the Awarding Organisations and Summit Skills, and be a requirement for centre approval

5. The "Simulated Assessment Facility" must be approved by the centre's External Verifier.

Assessment of occupational competence

The assessment of "Occupational Competence" is a combination of evidence sourced from a real working environment and/or workplace as identified in the assessment requirements for each unit and evidence from mandatory simulated assessment provided by "The Qualification's" Electrotechnical Occupational Competence unit's assessment requirements. These requirements state that:

"To undertake this unit, learners must provide auditable formal evidence that they have the relevant electrotechnical knowledge, understanding, experience and skills at the appropriate level that enables them to carry out the assessment activities effectively and safely as prescribed for each learning outcome".

Evidence from *Permissible Simulated Assessment* does **not meet** the assessment requirements of "The Qualification's Electrotechnical Occupational Competence" unit.

Simulated assessment conditions and environment

1. The Environment: An environment that is an “Independent Controlled Assessment Environment” and is dedicated to assessment activity only and does not facilitate for candidates’ working or training activity.
2. An “Independent Controlled Assessment Environment” can be established by:
 - exclusively dedicating an area in a building or structure for the purpose of simulated assessment only that provides the facilities for simulated assessment in keeping with 3.1 above.
 - or
 - changing a working or training environment for a specified period of time to an “Independent Controlled Assessment Environment” that facilitates for simulated assessment in keeping with 3.1 above.
3. Throughout the simulated assessment activity **only** candidates being assessed and relevant assessors (see above) should be present in the “Independent Assessment Environment”
4. All simulated assessment facilities **must** be in accordance with the current version of BS7671: Requirements for Electrical Installations
5. The Delivery/Assessment Centre of “The Qualification” **must** notify their External Verifier of any planned simulated assessment, including date of the assessment and details of the simulated assessment activity, at least 21 days before the assessment takes place.

Assessment in an “independent controlled assessment environment” must:

- be carried out in accordance with a pre-determined “Assessment Plan” compatible to the candidate’s identified and recorded assessment needs
- be undertaken using the “Direct Observation” method of assessment
- include recorded “Supplementary Questioning” and answers compatible to the candidate’s identified and recorded assessment needs.

4 About your approved centre

Types of approved centres

Assessment for your qualification will be carried out at your centre. Your centre may be your place of work, a college, training provider or a combination of these.

City & Guilds approves centres to offer their qualifications and regularly monitors them to make sure they meet our quality standards and follow our assessment policies.

Centre responsibilities

Your centre is responsible for the administration of your qualification. Centre staff will:

- register you with City & Guilds
- give you your City & Guilds enrolment number
- apply for your certificate(s) when you have completed your qualification or units.

Centres are also responsible for supporting you as you work towards your NVQ. Centres will:

- carry out an initial assessment with you
- tell you about any learning or training (and resources) you will need to help you complete your qualification
- provide an induction programme to explain how the assessment process works
- produce an assessment plan for you.

Assessment roles

The following people at your centre will help you achieve your qualification.

The assessor

The assessor is the person you will have the most contact with as you work towards your qualification. Your assessor will:

- help you identify any training you need
- agree an assessment plan with you
- help you plan and organise your workload and evidence
- observe you carrying out your job in the workplace over a period of time
- ask you questions about the work you do
- make decisions about your evidence
- judge when you are competent and meet the national standards
- give you feedback about your evidence and competence.

You may have more than one assessor depending on which units of the qualification you take.

The Internal Quality Assurer

The Internal Quality Assurer (previously called the internal verifier) maintains the quality of assessment within the centre.

The mentor

A mentor is someone in your workplace who can help and support you as you are working towards your qualification but does not carry out assessments. They may be able to provide you with witness testimony for your qualification.

Witness

Witnesses do not judge your overall competence but may provide you with statements about your performance which can be used as evidence of your work.

5 About candidates

Candidate role and responsibilities

Your responsibilities as a City & Guilds candidate are to

- provide your centre with your personal details so you can be registered with City & Guilds
- participate in an initial assessment and induction
- agree a personal assessment plan with your assessor
- collect and organise your evidence as agreed in your assessment plan
- attend regular meetings with your assessor to discuss your progress and to amend your plan when required
- meet with other centre and City & Guilds staff to talk about your qualification and evidence
- make sure you understand and comply with health and safety law and regulations.

Your centre **may** ask you to agree and sign a learning contract with them to show how you will be assessed for your qualification.

Candidate registration number

Make sure you keep a note of your unique City & Guilds registration number on the front page of this logbook.

Moving to a new centre

If you change jobs or move to a new centre before you complete your qualification, you may be able to complete it at a new centre. Ask your centre to apply for any certificates of unit credit for you before you leave, and add them to your records.

A new centre will need your candidate enrolment number, your assessment records and evidence to help you complete your qualification.

6 The assessment process

6.1 Before you start your qualification

Initial assessment

Before you start work on your qualification you will meet with your assessor to discuss what you need to do to complete your qualification. This can include:

- checking you are taking the right qualification level
- checking you have chosen suitable units
- identifying any training or learning you will need to help you gain your qualification
- agreeing an assessment plan
- signing a learning contract.

Skill scan

As part of this meeting, you will discuss the skills and knowledge you may already have, and decide how this can be used towards your qualification. This process is sometimes called a Skill scan.

There is a skill scan form in this logbook you can use to record the skills you may already have.

6 The assessment process

6.2 Qualification assessment

The assessment process

Once you have chosen your units you will make and agree an assessment plan with your assessor. This will show:

- the units the plan covers
- when you will be assessed
- where the assessment will take place
- what you will be doing
- what evidence you will produce
- who will assess you.

The plan should also indicate the methods of assessment to be used to collect your evidence.

Evidence can include:

- direct observation in the workplace by a qualified assessor
- witness testimony of work carried out by you in the workplace written by an expert witness
- questioning – this could be verbal, written or computer based
- other evidence which can include photographs or personal accounts.

Your centre will explain the different types of evidence to you in more detail. There is an assessment plan form you can use in this logbook.

7 Using your logbook/workplace evidence record

Recording forms

This logbook contains all of the forms you and your assessor will need to plan, review and organise your evidence. Your assessor will be able to help you decide which forms you need to complete and help you fill them in.

Candidate job profile

You can use this form to record your personal details if you don't already have a Candidate résumé/ CV.

Skill scan/Initial assessment

This can be used to record the skills and knowledge you may already have. This may be part of your initial assessment.

Overall unit sign-off

You can use this form to log your achievement of the units for the whole qualification including completion of assignments and online assessment

Onsite Assessment Plan/Feedback

You and your assessor will use this form to plan each assessment session. Your assessor will use this form to give feedback on the task. It will also enable you and your assessor to plan what actions need to be done before the next session.

On site Observation Report

Your assessor will complete during observation. You will both sign this as a true record.

Supplementary Evidence Sheet

To be completed by you, your workplace recorder or another witness to evidence meeting assessment criteria that could not be signed off during direct observation with your assessor.

Oral Questioning Supplementary Evidence Sheet

Your assessor will use this form to log any additional questions and answers asked during observation or to mop up any missing evidence.

Photographic Supplementary Evidence

Use this form to include a photo and brief description of the task being carried out.

Workplace recorder details

To be completed by your Workplace recorders to confirm occupational competence.

Assessor Briefing and Report Continuation Sheet

Additional space for your assessor to make notes

Signature sheet

This is used to record the details of staff that will provide you with witness testimony.

Units

These record where the evidence you produce meets the requirements of the unit. You should give each piece of evidence an evidence reference number.

Please photocopy these forms as many times as required to log the evidence.

8 Candidate progress record

Level 3 NVQ Diplomas Electrotechnical Technology (2357) Electrotechnical Technology (2357)

Units	311	312	313	315	316	317	318	332	333				
Credits	3	3	3	6	4	6	6	3	4				
Total Credits Achieved:													

Minimum 38 credits

I confirm that the evidence supplied for the above listed units is authentic and a true representation of my own work. The work logged in the following pages is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this qualification with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IQA Name:	
IQA Signature:	
Date:	

Candidate job profile



If you already have your own CV you can use that instead of this form.

Name:

Place of Work:

Assessor:.....

Outline of job role

Previous roles & responsibilities relevant to the qualification:

Previous qualification and training relevant to the qualification:

Overall Unit Sign-off

To achieve the **City & Guilds Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment) (2357-13) 501/2232/0**, learners must achieve **104** credits from the mandatory units below.

City & Guilds unit	Unit title	Assessment Type	Unit Achieved Yes/No	Assessor Initials	Date
Core Mandatory group					
301	Understanding health and safety legislation, practices and procedures (Installing and maintaining electrotechnical systems and equipment)	Online and Assignment			
302	Understanding environmental legislation, working practices and the principles of environmental technology systems	Assignment			
303	Understanding the practices and procedures for overseeing and organising the work environment (Electrical Installation)	Assignment			
304	Understanding the principles of planning and selection for the installation of electrotechnical equipment and systems in buildings, structures and the environment	Assignment			
305	Understanding the practices and procedures for the preparation and installation of wiring systems and electrotechnical equipment in buildings, structures and the environment	Online and Assignment			
306	Understanding the principles, practices and legislation for the termination and connection of conductors, cables and cords in electrical systems	Assignment			
307	Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment	Assignment			

308	Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment	Assignment			
309	Understanding the electrical principles associated with the design, building, installation and maintenance of electrical equipment and systems	Short Answer Test Online and Assignment			
311	Applying health and safety legislation and working practices (Installing and maintaining electrotechnical systems and equipment)	Performance			
312	Applying environmental legislation, working practices and the principles of environmental technology systems	Performance			
313	Overseeing and organising the work environment (Electrical installation)	Performance			
315	Planning, preparing and installing wiring systems and associated equipment in buildings, structures and the environment	Performance			
316	Terminating and connecting conductors, cables and flexible cords in electrical systems	Performance			
317	Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment	Performance			
318	Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment	Performance			
399	Electrotechnical Occupational competence (AM2)	At approved National Electrical Training (NET) centre			

To achieve the **City & Guilds Level 3 NVQ Diploma in Installing Electrotechnical Services (Electrical Maintenance) (2357-23/92) 501/1624/1** learners must achieve **103** credits from the units below, **all** of which are mandatory.

City & Guilds unit	Unit title	Assessment Type	Unit Achieved Yes/No	Assessor Initials	Date
Core Mandatory group					
301	Understanding health and safety legislation, practices and procedures (Installing and maintaining electrotechnical systems and equipment)	Online and Assignment			
302	Understanding environmental legislation, working practices and the principles of environmental technology systems	Assignment			
306	Understanding the principles, practices and legislation for the termination and connection of conductors, cables and cords in electrical systems	Assignment			
307	Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment	Assignment			
308	Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment	Assignment			
309	Understanding the electrical principles associated with the design, building, installation and maintenance of electrical equipment and systems	Short Answer Test Online and Assignment			
311	Applying health and safety legislation and working practices (Installing and Maintaining Electrotechnical Systems and Equipment)	Performance			
312	Applying environmental legislation, working practices and the principles of environmental technology systems	Performance			
313	Overseeing and organising the work environment (Electrical Installation)	Performance			
316	Terminating and connecting conductors, cables and flexible cords in electrical systems	Performance			

317	Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment	Performance			
318	Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment	Performance			
321	Understanding the practices and procedures for overseeing and organising the work environment (electrical maintenance)	Assignment			
322	Understanding the practices and procedures for planning and preparing to maintain electrotechnical systems and equipment	Assignment			
323	Understanding the practices and procedures for maintaining electrotechnical systems and equipment	Assignment			
332	Plan and prepare to maintain electrotechnical systems and equipment	Performance			
333	Maintain electrotechnical systems and equipment	Performance			
399	Electrotechnical Occupational competence (AM2)	At approved National Electrical Training (NET) centre			

Declaration

I confirm that the evidence supplied for the above selected units is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of the selected units with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IQA Name:	
IQA Signature:	
Date:	

On Site Assessment Plan / Feedback



Evidence Reference:	
----------------------------	--

Qualification:
Level:

Qualification number:

Candidate name:
Assessor name:

Date:

Candidate prepared for assessment (Provide details below)	Yes / No	Candidate requires support	Yes / No
Candidate briefed on appeals procedure	Yes / No	Support required	

Assessment Location / Address and postcode:

Type of work to be carried out:

Assessor Feedback:
(Use Assessor continuation sheet if required)

Forward Planning:

Candidate Signature:		
Assessor Signature:		Date:
IQA Name:	IQA Signature:	Date:

Photographic Supplementary Evidence



Evidence Reference:	
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Scheme / Award:

Scheme Number:

Level:

Candidate Name:

Unit Number:

Brief description of task being carried out in the photograph (to be completed by candidate):

(Attach Photo in this Box)

Location of photograph:

Candidate Signature:		
Assessor Signature:		Date:
IQA Name:	IQA Signature:	Date:

Workplace recorder details



If a workplace recorder is to be used to confirm your competence in the workplace (system to be agreed by centre assessor) then to meet the requirements of the electrical industry qualification assessment strategy (as agreed by the key industry bodies) he/she must be qualified or suitably experienced: He / she must have ONE of the following: a minimum of 5 years full time work experience in electrical employment. The designated workplace recorder should ordinarily be your immediate work supervisor. It is recognised that over the lifetime of the qualification you may be allocated more than one workplace recorder. The requirements detailed below therefore MUST be completed by each workplace recorder allocated to you.

I confirm I am suitably experienced or qualified in line with the industry requirements for workplace recorders detailed above. I acknowledge that I will only counter sign documentation requested by the candidate where to my knowledge only the candidate has completed the work and on the understanding that the work has been carried out to a commercially acceptable standard.

Workplace Recorder Name:	
Workplace Recorder Signature:	Date:

I confirm that I am suitably experienced or qualified in line with the industry requirements for workplace recorders detailed above. I acknowledge that I will only counter sign documentation requested by the candidate where to my knowledge only the candidate has completed the work and on the understanding that the work has been carried out to a commercially acceptable standard.

Workplace Recorder Name:	
Workplace Recorder Signature:	Date:

I confirm that I am suitably experienced or qualified in line with the industry requirements for workplace recorders detailed above. I acknowledge that I will only counter sign documentation requested by the candidate where to my knowledge only the candidate has completed the work and on the understanding that the work has been carried out to a commercially acceptable standard.

Workplace Recorder Name:	
Workplace Recorder Signature:	Date:

Assessor continuation sheet
On site assessment plan/feedback
On site observation



Evidence Reference:	
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Candidate Signature:		
Assessor Signature:		Date:
IQA Name:	IQA Signature:	Date:

Unit 311

Applying health and safety legislation and working practices (installing and maintaining electrotechnical systems and equipment) (ELTP01)

Level: 3

Credit value: 3

Recommended GLH: 10

Unit aim

This unit is designed to enable learners to develop the skills and apply the relevant knowledge associated with health and safety legislation, practices and procedures when installing and maintaining electrotechnical systems and equipment.

Learning outcomes

1. Be able to apply relevant health and safety legislation in the workplace
2. Be able to assess the work environment for hazards and identify remedial actions in accordance with health and safety legislation
3. Be able to apply methods and procedures to ensure work on site is in accordance with health and safety legislation
4. Be able to apply procedures to deal with and report health and safety in accordance with health and safety legislation

Assessment

This unit will be assessed within the workplace.

Evidence requirements

Learning Outcomes 1 to 4:

Auditable evidence sourced from a real working environment must be provided to illustrate that, the learner has demonstrated on two separate occasions they can apply health and safety legislation and working practices when installing and maintaining electrotechnical systems and equipment in accordance with approved industry practices, statutory and non-statutory regulations and the assessment criteria for each of the learning outcomes.

Unit 311

Applying health and safety legislation and working practices (installing and maintaining electrotechnical systems and equipment) (ELTP01)

3 Credits

Outcome 1 Be able to apply relevant health and safety legislation in the workplace

Assessment criteria	Evidence date					
The learner can:	Portfolio reference					
1.1 identify which workplace health and safety procedures are relevant to the working environment and comply with their duties and obligations as defined by current legislation and organisational procedures						
1.2 produce a risk assessment and method statement in accordance with organisational procedures and the limits of their responsibility						
1.3 work within the requirements of: <ul style="list-style-type: none"> • risk assessments • method statements • safe systems of work 						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 2 Be able to assess the work environment for hazards and identify remedial actions in accordance with health and safety legislation

Assessment criteria	Evidence date					
The learner can:	Portfolio reference					
2.1 identify unsafe situations and conditions and take remedial actions						
2.2 assess the work environment and revise work practices accordingly to take into account hazards which could cause harm, including the handling of potentially hazardous: <ul style="list-style-type: none"> • materials • tools • equipment 						
2.3 identify any hazards which may present a high risk and report their presence to relevant persons who have overall responsibility for health and safety in the workplace						
2.4 apply measures to control health and safety hazards in accordance with the limits of their capabilities and job responsibility						
2.5 select and use correct personal protective equipment and protection measures to ensure the health and safety of themselves and others in the work environment.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 3 Be able to apply methods and procedures to ensure work on site is in accordance with health and safety legislation

Assessment criteria	Evidence date					
The learner can:	Portfolio reference					
3.1 demonstrate personal conduct and behaviour around the workplace, to ensure that the health and safety of themselves and others is not endangered						
3.2 apply procedures to ensure the safe use, maintenance and storage of tools, plant and equipment as stipulated in: <ul style="list-style-type: none"> workplace policies (company and site) supplier information manufacturer's instructions 						
3.3 comply with hazard warning, mandatory instruction and prohibition notices						
3.4 apply procedures to ensure the safety of the work location through the correct use of guards and notices						
3.5 use access equipment correctly.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 4 Be able to apply procedures to deal with and report health and safety in accordance with health and safety legislation

Assessment criteria	Evidence date					
The learner can:	Portfolio reference					
4.1 demonstrate the correct procedures to follow in the event of injury to themselves or others.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

4.1 Procedures:

- Application of basic first aid procedures
- Notification of emergency services
- Reporting of incidents

Unit 311

Applying health and safety legislation and working practices (installing and maintaining electrotechnical systems and equipment) (ELTP01)

Declaration

I confirm that the evidence supplied for the above listed unit is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IQA Name:	
IQA Signature:	
Date:	

Unit 312

Applying environmental legislation, working practices and the principles of environmental technology systems (ELTP02)

Level: 3

Credit value: 3

Recommended GLH: 10

Unit aim

This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate they can apply environmental legislation, working practices and interpret the principles of environmental technology systems in accordance with approved industry practices, statutory and non-statutory regulations:

- The Electricity at Work Regulations (1989)
- The current edition of BS7671 Wiring Regulations
- Health & Safety Act (1974)
- Building Regulations (2000)

Learning outcomes

1. Be able to apply environmental legislation, working practices and principles for electrotechnical services
2. Be able to apply work methods and procedures to reduce material wastage and the impact of work activities on the work environment
3. Be able to supply information on environmental technology systems in the work location.

Assessment

This unit will be assessed within the workplace.

Evidence requirements

Learning Outcomes 1 and 2 – Auditable evidence sourced from a real working environment must be provided to illustrate that the learner has demonstrated on two separate occasions they can apply environmental legislation, working practices appropriate to the installation of electrotechnical systems and equipment.

Learning Outcome 3 - Auditable evidence sourced from a real working environment must be provided to illustrate that the learner has demonstrated on two separate occasions they can interpret and supply information on the operating principles of the identified environmental technology systems.

Unit 312

Applying environmental legislation, working practices and the principles of environmental technology systems (ELTP02)

3 Credits

Outcome 1 Be able to apply environmental legislation, working practices and principles for electrotechnical services

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
1.1 demonstrate workplace procedures for the safe handling, storage and disposal of hazardous materials and products, in accordance with any of the following: <ul style="list-style-type: none"> • Environmental Protection Act • the Hazardous Waste Regulations • Pollution Prevention and Control Act • Control of Pollution Act • the Control of Noise at Work Regulations • Packaging (Essential Requirements) Regulations • Environment Act • The Waste Electrical and Electronic Equipment Regulations 						
1.2 demonstrate work practices and procedures which are in accordance with the requirements for electrical systems and equipment as specified in the relevant sections of the Building Regulations and the Guide for Sustainable Homes						
1.3 demonstrate appropriate organisational procedures for reporting environmental hazards.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 2 Be able to apply work methods and procedures to reduce material wastage and the impact of work activities on the work environment

Assessment criteria	Evidence date					
The learner can:	Portfolio reference					
2.1 demonstrate prefabrication and installation methods which can help to reduce material wastage						
2.2 identify and use environmentally friendly materials, products and procedures for the installation and maintenance of electrotechnical systems and equipment						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 3 Be able to supply information on environmental technology systems in the work location

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
3.1 provide information on the operational requirements and benefits of environmental technology systems						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

3.1 Environmental technology systems:

- Solar photovoltaic
- Wind energy
- Micro hydro
- Heat pumps
- Combined Heat and Power (CHP) including micro CHP
- Grey water recycling
- Rainwater harvesting
- Biomass heating
- Solar thermal hot water heating

Unit 312

Applying environmental legislation, working practices and the principles of environmental technology systems (ELTP02)

Declaration

I confirm that the evidence supplied for the above listed unit is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IQA Name:	
IQA Signature:	
Date:	

Unit 313

Overseeing and organising the work environment (electrical installation) (ELTP03)

Level: 3

Credit value: 3

Recommended GLH: 10

Unit aim

This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate they can implement practices and procedures for overseeing and organising the work environment for the installation of electrotechnical systems and equipment.

Learning outcomes

1. Be able to provide relevant people with technical and functional information for work on electrical systems and equipment
2. Be able to oversee health and safety during work on electrical systems and equipment
3. Be able to co-ordinate liaison with other relevant persons during work activities
4. Be able to organise and oversee work activities and operations
5. Be able to organise a programme for working on electrical systems and equipment
6. Be able to organise the resource requirements for work on electrical systems and equipment

Assessment

This unit will be assessed within the workplace.

Evidence requirements

Learning Outcomes 1 to 6 - Auditable evidence sourced from a real working environment must be provided to illustrate that, the learner has demonstrated on two separate occasions they can implement practices and procedures for overseeing and organising the work environment for the installation of electrotechnical systems and equipment in accordance with the assessment criteria for each of the learning outcomes.

Unit 313

Overseeing and organising the work environment (electrical installation) (ELTP03)

3 Credits

Outcome 1 Be able to provide relevant people with technical and functional information for work on electrical systems and equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
1.1 identify the relevant people (such as customers/ clients) that need to be supplied with technical and functional information						
1.2 identify any additional information that may also be required						
1.3 liaise with relevant people to determine the information they require to ensure that systems, equipment or components can be operated safely and effectively						
1.4 identify appropriate technical and functional information that is required for the work activity						
1.5 provide information in a timely, courteous and professional manner in accordance with organisational procedures.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

1.2 Additional information:

- Health and Safety information
- Isolation procedures for products/equipment in case of emergencies
- Appropriate person's address or contact details for further advice or help

Outcome 2 Be able to oversee health and safety during work on electrical systems and equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
2.1 produce risk assessments and method statements, to cover their own work and others working the area (colleagues and other operatives) in accordance with their level of responsibility						
2.2 follow procedures to confirm that work is being completed in accordance with health and safety legislation and industry standards						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 3 Be able to co-ordinate liaison with other relevant persons during work activities

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
3.1 comply with approved procedures to ensure effective co-ordination with other workers/contractors, including steps to resolve issues which are outside the scope of their job role						
3.2 apply communication techniques that are clear, accurate and appropriate to the situation						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 4 Be able to organise and oversee work activities and operations

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
4.1 organise operatives by allocating duties and responsibilities to make the best use of their competence						
4.2 monitor the work of operatives to ensure it is in accordance with: <ul style="list-style-type: none"> industry working practices programme of work health and safety requirements cost effectiveness 						
4.3 apply the correct procedures when a non compliance is identified during the completion of work activities.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 5 Be able to organise a programme for working on electrical systems and equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
5.1 produce a programme of work from the work specification, including requirements for the following: <ul style="list-style-type: none"> estimate of the amount of time required for completion of the work liaison with other trades where necessary 						
5.2 communicate with others clearly and concisely						
5.3 identify situations when it is necessary to liaise with other relevant parties to resolve issues which are outside the scope of their job role.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 6 Be able to organise the resource requirements for work on electrical systems and equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
6.1 demonstrate procedures for organising provision of resources						
6.2 demonstrate procedures for confirming that materials available are: <ul style="list-style-type: none"> the right type fit for purpose in the correct quantity suitable for work to be completed cost efficiently. 						
6.3 apply procedures to ensure that resources are delivered on time and confirm that they are undamaged at the point of delivery						
6.4 demonstrate procedures which ensure the safe and effective storage of materials, tools and equipment in the work location						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

6.1 Resources:

- Materials
- Components
- Plant
- Equipment
- Labour
- Tools
- Measuring and test instruments

Unit 313

Overseeing and organising the work environment (electrical installation) (ELTP03)

Declaration

I confirm that the evidence supplied for the above listed unit is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IQA Name:	
IQA Signature:	
Date:	

Unit 315 Planning, preparing and installing wiring systems and associated equipment in buildings, structures and the environment (ELTP04)

Level: 3

Credit value: 6

Recommended GLH: 12

Unit aim

This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate the competence required to plan, prepare and install wiring systems and associated equipment in buildings, structures and the environment in accordance with approved industry practices, statutory and non-statutory regulations:

- The Electricity at Work Regulations (1989)
- The current edition of BS7671 Wiring Regulations
- Health & Safety Act (1974)
- Building Regulations (2000)

Learning outcomes

1. Be able to prepare the working environment for the installation of wiring systems, enclosures and associated equipment
2. Be able to correctly interpret appropriate information for the installation of wiring systems, enclosures and associated equipment
3. Be able to confirm that planned work is in accordance with the installation specification
4. Be able to confirm the electrical supply is in accordance with the installation specification
5. Be able to measure and mark-out the fixing and fitting locations for wiring systems, wiring enclosures and equipment in accordance with current relevant statutory and non statutory regulations
6. Be able to fit and fix wiring systems, wiring enclosures and associated equipment safely in accordance with the installation specification
7. Be able to confirm any variations to the installation specification or planned programme of work

Assessment

This unit will be assessed within the workplace.

Evidence requirements

Learning Outcome 1:

- Authorised confirmation that the learner has had involvement and experience in safe-isolation procedures as relevant on two separate occasions.
- Auditable evidence must be provided that the learner has demonstrated that they have competently undertaken a risk assessment on two separate occasions.
- Auditable evidence sourced from a real working environment must be provided to illustrate that the learner has demonstrated on two separate occasions they can competently.
- Interpret installation specifications to produce material and equipment requisites.
- Identify and select material, equipment and components which are compatible with the installation specification.
- Identify suitable methods, procedures and practices for the installation of electrical systems, enclosures and associated equipment.
- Confirm site readiness for installation work to begin.
- Confirm secure site storage facilities for tools, equipment, materials and components.

Learning Outcomes 2 to 7

Auditable evidence sourced from a real working environment must be provided to illustrate that the learner has demonstrated on two separate occasions they can prepare and install wiring systems and associated equipment in buildings, structures and the environment in accordance with approved industry practices, statutory and non-statutory regulations and the assessment criteria for each of the learning outcomes.

All assessment activities must enable the learner to demonstrate that they understand and can apply the relevant requirements, as appropriate, of:

- the Electricity at Work Regulations (1989)
- the current edition of BS7671 Wiring Regulations
- Health & Safety Act (1974)
- Building Regulations (2000)
- Management of Health & Safety at Work Regulations
- Reporting of Injuries, Diseases & Dangerous Occurrences Regulations
- Provision & Use of Work Equipment Regulations
- Manual Handling Operations Regulations
- Personal Protective Equipment at Work Regulations
- Work at Height Regulations
- Control of Substances Hazardous to Health Regulations
- Control of Asbestos at Work Regulations.

Types of wiring systems and enclosures:

1. Conduit (PVC)
2. Conduit (Metallic)
3. Trunking (PVC)
4. Trunking (Metallic)
5. Cable Tray
6. Cable Basket
7. Ladder systems
8. Ducting
9. Modular wiring systems
10. Busbar systems and Powertrack

A candidate **must** provide evidence of the “planning, preparation and installation” of **seven from the ten** types of wiring systems and enclosures listed, of which:

- four **must** be sourced from practical activities in the workplace and
- can be generated in simulated conditions

Note: The selection of the three types of wiring system and wiring enclosure for “Planning, Preparation and Installation” in simulated conditions **must** be carried-out in consultation with and endorsed by the candidate’s employer.

Types of cable

1. Thermosetting insulated cables including flexes
2. Single and multicore thermoplastic (PVC)
3. PVC/PVC flat profile cable
4. SWA cables (XLPE, PVC)
5. Fire resistant cable
6. MICC (with and without PVC sheath)
7. Armoured/braided flexible cables and cords
8. Data cables
9. Fibre optic cable

A candidate **must** provide evidence of the “planning, preparation and installation” of **seven from the nine** types of cables listed, of which:

- 4 **must** be sourced from practical activities in the workplace. and
- can be generated in simulated conditions

Note: The selection of the three types of cable for “Planning, Preparation and Installation” in simulated conditions **must** be carried-out in consultation with, and endorsed by, the learner’s employer.

Unit 315 Planning, preparing and installing wiring systems and associated equipment in buildings, structures and the environment (ELTP04)

6 Credits

Outcome 1 Be able to prepare the working environment for the installation of wiring systems, enclosures and associated equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
1.1 ensure the health and safety of themselves and others within the work location						
1.2 identify and use suitable personal protective equipment throughout the completion of work activities						
1.3 complete preparatory work for the installation of electrical systems, enclosures and associated equipment						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

1.3 Preparatory work:

- Interpretation of installation specifications to produce material and equipment requisites
- Identification and selection of material, equipment and components which are compatible with the installation specification
- Identification of suitable methods, procedures and practices
- Confirmation of site readiness for installation work to begin
- Confirmation of secure site storage facilities for tools, equipment, materials and components
- Confirmation that safe isolation has been carried out (if appropriate) in accordance with regulatory requirements
- Completion of a risk assessment

Outcome 2 Correctly interpret appropriate information for the installation of wiring systems, enclosures and associated equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
2.1 use information and documentation that is current and relevant to the work required						
2.2 use documentation to confirm that materials and equipment is of the correct quantity and is free from damage						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

2.1 Information and documentation:

- Installation specifications
- Work schedules
- Work programmes
- Regulatory documents (including current version of the IEE Wiring Regulations and relevant guidance notes)
- Method statements
- Manufacturer's instructions

2.2 Documentation:

- Materials schedules
- Plant and equipment schedules
- Operating instructions
- Tools and instruments

Outcome 3 Confirm that planned work is in accordance with the installation specification

Assessment criteria (Knowledge) The learner can:	Portfolio reference	
3.1 use appropriate procedures to record: <ul style="list-style-type: none"> contract variations site instructions site events/diary. 		
3.2 demonstrate that authorisation has been obtained from the relevant person(s) prior to commencement of the work		
3.3 produce a record of any pre work damage or defects to existing equipment or building features, and report to the relevant person (customer; client; site manager; line manager)		
	Type of evidence →	
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report		

Range

3.2 Relevant person(s):

- Other workers
- Customers/clients
- Public (if appropriate)

Outcome 4 Confirm the electrical supply is in accordance with the installation specification

Assessment criteria (Knowledge) The learner can:	Portfolio reference	
4.1 verify the compatibility of the electrical supply to the requirements of the installation specification		
4.2 identify the earthing arrangement for the electrical installation		
	Type of evidence →	
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report		

Outcome 5 Measure and mark-out the fixing and fitting locations for wiring systems, wiring-enclosures and equipment in accordance with current relevant statutory and non-statutory regulations

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
5.1 ensure that the planned locations for the wiring system(s) and its associated equipment are compatible with other site services requirements						
5.2 use different measuring and marking out techniques which are appropriate to the wiring system, wiring enclosure and/or associated equipment that is being installed						
5.3 ensure that the planned locations are visually acceptable and in accordance with the installation specification						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 6 Fit and fix wiring systems, wiring enclosures and associated equipment safely and in accordance with the installation specification

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
6.1 produce a planned programme of work for the fitting and fixing of wiring systems, wiring enclosures and associated equipment in accordance with: <ul style="list-style-type: none"> • a safe system of work • co-ordination with other site services • relevant regulations (eg IEE Wiring Regulations; building regulations) • installation specification • manufacturers' instructions 						

<p>6.2 install the following in accordance with the IEE Wiring Regulations, the installation specification and agreed planned programme of work:</p> <ul style="list-style-type: none"> • thermosetting insulated cables including flexes • single and multicore thermoplastic (PVC) and thermosetting insulated cables • PVC/PVC flat profile cable • MICC (with and without PVC sheath) • SWA cables (PILC, XLPE, PVC) • armoured/braided flexible cables and cords • data cables • fibre optic cable • fire resistant cable 						
<p>6.3 install the following in accordance with the IEE Wiring Regulations, the installation specification and agreed planned programme of work:</p> <ul style="list-style-type: none"> • conduit (PVC and metallic) • trunking (PVC and metallic) • cable tray • cable basket • ladder systems • ducting • modular wiring systems • Busbar systems and Powertrack 						
<p>6.4 determine the cable carrying capacity of conduit, trunking and ducting in accordance with the IEE Wiring Regulations and the installation specification</p>						
<p>6.5 install the following types of electrical equipment and accessories, in accordance with the IEE Wiring Regulations, the installation specification, manufacturers' instructions and the agreed planned programme of work:</p> <ul style="list-style-type: none"> • isolators and switches • socket-outlets • distribution-boards • consumer units. • earthing fault and over current protective devices • luminaires • control equipment • data socket outlets • auxiliary equipment (eg heating/water system components) 						
<p>6.6 dispose of unwanted material and equipment in accordance with site procedures and statutory requirements</p>						
<p>Type of evidence →</p>						
<p>O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report</p>						

Outcome 7 Confirm any variation to the installation specification or planned programme of work

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
7.1 confirm that, where variations to the installation specification and/or work programme have been identified, appropriate action has been taken after agreement of relevant persons (eg customer; client; site manager)						
7.2 verify that that the completed system meets specified requirements in terms of ensuring that components and equipment of the correct type, fit for purpose and are installed in accordance with the IEE Wiring Regulations, the installation specification and, as appropriate, with manufacturer instructions						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Unit 315

Planning, preparing and installing wiring systems and associated equipment in buildings, structures and the environment (ELTP04)

Declaration

I confirm that the evidence supplied for the above listed unit is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IQA Name:	
IQA Signature:	
Date:	

Unit 316

Terminating and connecting conductors, cables and flexible cords in electrical systems (ELTP05)

Level: 3

Credit value: 4

Recommended GLH: 8

Unit aim

This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate the competence required to terminate and connect conductors, cables and flexible cords in electrical systems in accordance with approved industry practices, statutory and non-statutory regulations:

- The Electricity at Work Regulations (1989)
- The current edition of BS7671 Wiring Regulations
- Health & Safety Act (1974)
- Building Regulations (2000)

Learning outcomes

1. be able to confirm safety of system prior to completion of any termination and connection in accordance with statutory and non statutory regulations
2. be able to terminate and connect conductors, cables and flexible cords in electrical wiring systems and equipment
3. be able to confirm that terminations and connections are safe and free from defects in accordance with statutory and non statutory regulations.

Assessment

This unit will be assessed within the workplace.

Evidence requirements

Learning Outcome 1:

- Authorised confirmation that the learner has had involvement and experience in safe-isolation procedures as relevant on two separate occasions.
- Auditable evidence must be provided that the learner has demonstrated that they have competently undertaken a risk assessment on two separate occasions.

Learning Outcomes 2 and 3

Auditable evidence sourced from a real working environment must be provided to illustrate that the learner has demonstrated on two separate occasions they can terminate and connect all the identified conductors and cables in accordance with the assessment criteria for each of the learning outcomes.

All assessment activities must enable the learner to demonstrate that they understand and can apply the relevant requirements, as appropriate, of:

- the Electricity at Work Regulations (1989)
- the current edition of BS7671 Wiring Regulations
- Health & Safety Act (1974)
- Building Regulations (2000)
- Management of Health & Safety at Work Regulations
- Reporting of Injuries, Diseases & Dangerous Occurrences Regulations
- Provision & Use of Work Equipment Regulations
- Manual Handling Operations Regulations
- Personal Protective Equipment at Work Regulations
- Work at Height Regulations
- Control of Substances Hazardous to Health Regulations
- Control of Asbestos at Work Regulations

Types of cable

1. Thermosetting insulated cables including flexes
2. Single and multicore thermoplastic (PVC)
3. PVC/PVC flat profile cable
4. SWA cables (XLPE, PVC)
5. Fire resistant cable
6. MICC (with and without PVC sheath)
7. Armoured/braided flexible cables and cords
8. Data cables
9. Fibre optic cable

A candidate **must** provide evidence of the “termination and connection” of **7 from the 9** types of cables listed, of which:

- 4 **must** be sourced from practical activities in the workplace.
- and
- can be generated in simulated conditions

Note: The selection of the three types of cable to be terminated and connected in simulated conditions **must** be carried-out in consultation with, and endorsed by, the learner’s employer.

Unit 316

Terminating and connecting conductors, cables and flexible cords in electrical systems (ELTP05)

4 Credits

Outcome 1 Be able to confirm safety of systems prior to completion of any termination and connection in accordance with statutory and non statutory regulations

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
1.1 carry out safe isolation of electrical circuits and complete electrical installations in accordance with regulatory requirements						
1.2 ensure the health and safety of themselves and others within the work location in terms of: <ul style="list-style-type: none"> • selection and use of tools • PPE • risk assessment • reporting of unsafe situations • adherence to relevant statutory and non-statutory regulations 						
1.3 check the safety of electrical systems and equipment prior to the completion of termination and connections in terms of: <ul style="list-style-type: none"> • presence of supply • mechanical soundness 						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 2 Be able to terminate and connect conductors, cable and flexible cords in electrical wiring systems and equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
2.1 terminate and connect conductors, cables and flexible cords in accordance with the installation specification, manufacturer instructions and IEE Wiring Regulations						
2.2 connect to electrical equipment and accessories , in accordance with the installation specification, manufacturer instructions and IEE Wiring Regulations						
2.3 terminate and connect conductors, cables and cords using the following techniques: <ul style="list-style-type: none"> • screwing • crimping • soldering • non-screw compression 						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

2.1 Conductors, cables and flexible cords:

- Thermosetting insulated cables including flexes
- Single and multicore thermoplastic (PVC) and thermosetting insulated cables
- PVC/PVC flat profile cable
- MICC (with and without PVC sheath)
- SWA cables (PILC, XLPE, PVC)
- Armoured/braided flexible cables and cords
- Data cables
- Fibre optic cable
- Fire resistant cable

2.2 Electrical equipment and accessories:

- Socket-outlets
- Distribution-boards
- Consumer units
- Luminaires
- Electric motors and their control equipment
- Circuit Breakers
- Earthing terminals
- Control panels
- Data socket outlets
- Auxiliary equipment (eg heating system components)

Outcome 3 Be able to confirm that terminations and connections are safe and free from defects in accordance with statutory and non statutory regulations

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
3.1 ensure that terminations and connections are electrically and mechanically sound						
3.2 complete the necessary identification of cables, conductors and flexible cords in accordance with regulatory requirements and organisational procedures						
3.3 dispose of unwanted material and equipment in accordance with site procedures and statutory requirements						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Unit 316

Terminating and connecting conductors, cables and flexible cords in electrical systems (ELTP05)

Declaration

I confirm that the evidence supplied for the above listed unit is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IQA Name:	
IQA Signature:	
Date:	

Unit 317

Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment (ELTP06)

Level: 3

Credit value: 6

Recommended GLH: 12

Unit aim

This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate the competence required to inspect, test, commission and certify electrotechnical systems and equipment in buildings, structures and the environment in accordance with approved industry practices, statutory and non-statutory regulations:

- The Electricity at Work Regulations (1989)
- The current edition of BS7671 Wiring Regulations
- Health & Safety Act (1974)
- Building Regulations (2000)

Learning outcomes

1. Be able to confirm safety of the system and equipment prior to completion of inspection, testing and commissioning in accordance with statutory and non statutory regulations
2. Be able to inspect electrotechnical systems and equipment
3. Be able to test electrotechnical systems and equipment
4. Be able to commission electrotechnical systems and equipment.

Assessment

This unit will be assessed within the workplace.

Evidence requirements

Learning Outcome 1:

- Authorised confirmation that the learner has had involvement and experience in safe-isolation procedures as relevant on two separate occasions.
- Auditable evidence must be provided that the learner has demonstrated that they have competently undertaken a risk assessment on two separate occasions.

Learning Outcomes 2 to 4

Auditable evidence sourced from a real working environment and/or simulated conditions must be provided to illustrate that, the learner has demonstrated on two separate occasions they can apply the principles and follow the procedures for the inspecting, testing, commissioning and certifying of electrotechnical systems and equipment in buildings, structures and the environment in accordance with approved industry practices, statutory and non-statutory regulations and the assessment criteria for each of the learning outcomes.

Unit 317

Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment (ELTP06)

6 Credits

Outcome 1 Be able to confirm safety of the system and equipment prior to completion of inspection, testing and commissioning in accordance with statutory and non statutory regulations

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
1.1 carry out safe isolation procedures in accordance with regulatory requirements for electrical installations						
1.2 ensure the health and safety of themselves and others within the work location during inspection, testing and commissioning						
1.3 check the safety of electrical systems prior to the commencement of inspection, testing and commissioning.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 2 Be able to inspect electrotechnical systems and equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
2.1 assess whether the safe system of work is appropriate to the work activity						
2.2 carry out a visual inspection in accordance with the requirements of the installation specification, the IEE Wiring Regulations and IEE Guidance Note 3, that includes: <ul style="list-style-type: none"> • the installation methods of wiring systems and equipment • the selection of conductors, cables and cords • the selection of protective and isolation devices • routing and identification/labelling of conductors, cables and flexible cords • presence of means of earthing • presence of protective conductors and bonding • isolation • type and rating of over current protective devices 						
2.3 complete a schedule of inspections in accordance with the IEE Wiring Regulations and IEE Guidance Note 3.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 3 Be able to test electrotechnical systems and equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
3.1 select the test instruments and their accessories for tests						
3.2 carry out tests in accordance with the installation specification and the IEE Wiring Regulations and manufacturer's instructions						
3.3 verify test results and report all findings to relevant persons , as appropriate						
3.4 complete in accordance with the IEE Wiring regulations and IEE Guidance Note 3: <ul style="list-style-type: none"> • electrical installation certificates • minor electrical installation works certificates • schedules of inspections • schedules of test results 						
3.5 conform in accordance with the IEE Wiring Regulations and IEE Guidance Note 3, and where appropriate customer/client requirements to the procedures and requirements for the recording and retention of completed: <ul style="list-style-type: none"> • electrical installation certificates. • minor electrical installation works certificates • schedules of inspections • schedules of test results 						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

3.1 and 3.2 Tests:

- continuity
- insulation resistance
- polarity
- earth fault loop impedance
- prospective fault current
- RCD operation
- phase sequence
- functional testing.

3.3 Relevant persons:

- representatives of other services/colleagues
- customers/clients.

Outcome 4 Be able to commission electrotechnical systems and equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
4.1 clarify the commissioning procedures with relevant persons on site						
4.2 carry out the commissioning of circuits, equipment and components to confirm functionality, fit for purpose and safety in accordance with: <ul style="list-style-type: none"> the installation specification IEE Wiring Regulations manufacturer's instructions maintenance schedules health and safety requirements 						
4.3 demonstrate to the customer/client that the operation of the circuits, equipment and components are in accordance with the installation specification and customer/client requirements						
4.4 complete the handover of electrotechnical systems and equipment to relevant persons including the provision of accurate and complete documentation regarding the completed inspection, testing, commissioning and customer satisfaction.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

4.1 Relevant persons:

- Representatives of other services/colleagues
- Customers/clients

Unit 317

Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment (ELTP06)

Declaration

I confirm that the evidence supplied for the above listed unit is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IQA Name:	
IQA Signature:	
Date:	

Unit 318

Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment (ELTP07)

Level: 3

Credit value: 6

Recommended GLH: 12

Unit aim

This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate the competence required to diagnose and correct electrical faults in electrical systems and equipment in buildings, structures and the environment in accordance with approved industry practices, statutory and non-statutory regulations:

- The Electricity at Work Regulations (1989)
- The current edition of BS7671 Wiring Regulations
- Health & Safety Act (1974)
- Building Regulations (2000)

Learning outcomes

1. Be able to confirm safety of the system and equipment prior to diagnosing and correcting electrical faults in accordance with statutory and non statutory regulations
2. Be able to carry out procedures to identify faults on electrical systems and equipment
3. Be able to correct faults on electrical systems and equipment

Assessment

This unit will be assessed within the workplace.

Evidence requirements

Learning Outcome 1:

- Authorised confirmation that the learner has had involvement and experience in safe-isolation procedures as relevant on two separate occasions.
- Auditable evidence must be provided that the learner has demonstrated that they have competently undertaken a risk assessment on two separate occasions.

Learning Outcomes 2 to 4:

Auditable evidence sourced from a real working environment and/or simulated conditions must be provided to illustrate that, the learner has demonstrated on two separate occasions they can apply the principles and follow the procedures for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment in accordance with approved industry practices, statutory and non-statutory regulations and the assessment criteria for each of the learning outcomes.

Unit 318

Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment (ELTP07)

6 Credits

Outcome 1 Be able to confirm safety of the system and equipment prior to diagnosing and correcting electrical faults in accordance with statutory and non statutory regulations

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
1.1 carry out safe isolation procedures in accordance with regulatory requirements for electrical installations						
1.2 ensure the health and safety of themselves and others within the work location during inspection, testing and commissioning						
1.3 select and use appropriate warning notices and barriers						
1.4 check the safety of electrical systems prior to the commencement of diagnosing and correcting electrical faults.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 2 Be able to carry out procedures to identify faults on electrical systems and equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
2.1 use effective methods of communication to ascertain clear and detailed information about reported faults and any components which require replacing						
2.2 identify and use appropriate system specification documents which relate to the electrotechnical systems and equipment being worked upon						
2.3 report information about potential disruption that may be a consequence of fault diagnosis and correction work to relevant people						
2.4 assess the safe working practices which apply in the working environment to confirm that it is safe for fault identification work to take place						
2.5 perform suitable diagnostic tests on the installed electrotechnical systems to successfully identify faults						
2.6 use appropriate methods for locating faults on electrical systems and equipment						
2.7 use appropriate tools and instruments correctly to complete fault diagnosis work						
2.8 confirm test instruments are fit for purpose, functioning correctly and are correctly calibrated.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

2.3 Relevant people:

- Other workers/colleagues
- Customers/clients

2.5 Faults:

- Loss of supply
- Overload
- Short-circuit and earth fault
- Transient voltage
- Loss of phase/line
- Incorrect phase rotation
- High resistance joints
- Component, accessory or equipment faults

2.6 Appropriate methods:

- Procedures and sequences – logical approach
- Safe working practices
- Interpretation of data

2.8 Appropriate tools and instruments:

- Voltage indicator
- Low resistance ohm meter
- Insulation resistance testers
- EFLI and PFC tester
- RCD tester
- Tong tester/clamp on ammeter
- Phase sequence tester

Outcome 3 Be able to correct faults on electrical systems and equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
3.1 confirm appropriate repairs, removals and replacements and their implications with relevant people including: <ul style="list-style-type: none"> • other workers/colleagues • customers/clients • representatives of other services 						
3.2 perform fault correction procedures correctly and safely using appropriate tools, equipment and material						
3.3 perform the removal and replacement of components and associated equipment from electrotechnical systems to ensure: <ul style="list-style-type: none"> • ease of access to enable future maintenance • accordance with: <ul style="list-style-type: none"> ○ relevant regulations ○ manufacturer’s instructions ○ organisational procedures 						
3.4 apply appropriate procedures to ensure electrotechnical systems, equipment and components are left safe, in accordance with industry regulations, if the fault cannot be corrected immediately						
3.5 perform appropriate inspection and testing procedures to confirm that systems, equipment and components are functioning correctly after completion of fault correction work						
3.6 record test results and other appropriate information regarding the fault correction work clearly and accurately and report to relevant people, such as: <ul style="list-style-type: none"> • other workers/colleagues • customers/clients • representatives of other services 						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Unit 318

Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment (ELTP07)

Declaration

I confirm that the evidence supplied for the above listed unit is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IQA Name:	
IQA Signature:	
Date:	

Unit 332

Plan and prepare to maintain electrotechnical systems and equipment (ELTP09a)

Level: 3

Credit value: 3

Recommended GLH: 10

Unit aim

This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate the competence required to plan and prepare to maintain electrotechnical systems and equipment in accordance with approved industry practices, statutory and non-statutory regulations:

- The Electricity at Work Regulations (1989)
- The current edition of BS 7671 Wiring Regulations
- Health & Safety Act (1974)
- Building Regulations (2000)

Learning outcomes

1. Be able to carry out an initial review of the work location
2. Be able to confirm that all appropriate job information is available for use
3. Be able to use job information to determine work requirements
4. Be able to comply with appropriate authorisation and reporting procedures which apply when completing initial site inspections
5. Be able to confirm that planned work meets client requirements

Assessment

This unit will be assessed within the workplace.

Evidence requirements

Learning Outcome 1:

- Authorised confirmation that the learner has had involvement and experience in safe-isolation procedures as relevant on two separate occasions.
- Auditable evidence must be provided that the learner has demonstrated that they have competently undertaken a risk assessment on two separate occasions.

Learning Outcomes 2 and 3

Auditable evidence sourced from a real working environment must be provided to illustrate that the learner has demonstrated on two separate occasions they can plan and prepare to maintain electrotechnical systems and equipment in accordance with the assessment criteria for each of the learning outcomes.

All assessment activities must enable the learner to demonstrate that they understand and can apply the relevant requirements, as appropriate, of:

- the Electricity at Work Regulations (1989)
- the current edition of BS 7671 Wiring Regulations
- Health & Safety Act (1974)
- Building Regulations (2000)
- Management of Health & Safety at Work Regulations
- Reporting of Injuries, Diseases & Dangerous Occurrences Regulations
- Provision & Use of Work Equipment Regulations
- Manual Handling Operations Regulations
- Personal Protective Equipment at Work Regulations
- Work at Height Regulations
- Control of Substances Hazardous to Health Regulations
- Control of Asbestos at Work Regulations.

Unit 332

Plan and prepare to maintain electrotechnical systems and equipment (ELTP09a)

3 Credits

Outcome 1 Be able to carry out an initial review of the work location

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
1.1 conduct a risk assessment of the work location and record factors which may impact upon the work						
1.2 identify and apply procedures to ensure the health and safety of themselves and others within the work location for the duration of maintenance activities						
1.3 identify and use, appropriate personal protective equipment throughout the completion of work preparation activities						
1.4 complete preparatory work for the maintenance of electrical systems and equipment						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

1.1 Factors:

- Identification of suitable access equipment
- Identification of suitable lifting equipment
- Identification of suitable installation, fixing and fitting methods
- Safe isolation procedures
- Environmental considerations
- Consideration of other trades and personnel
- Switchgear requirements

1.4 Preparatory work:

- Identification of specifications for maintenance, including: drawings, diagrams (circuit and wiring), maintenance schedules/specifications, data charts, manufacturer’s manuals, servicing records/running logs, flow charts, standard maintenance time records
- Organisation of a work plan, including: definition of task; planned shut downs/isolations; safety precautions (provision for release of stored and latent energy); permits to work, organising tools, equipment and spare parts; documentation; communication with relevant parties; time/cost effectiveness
- Identification and selection of safe isolation methods for: electrical systems and pressurised systems (i.e. hydraulic, compressed air, water, gas)
- Identification and selection of methods to safely secure work areas including: fences, barriers, screens and warning signs
- Identification and selection of suitable: hand and power tools (110V ac or battery operated); portable and fixed lifting equipment; access equipment

- Provision for safe storage of tools, equipment and materials

Outcome 2 Be able to confirm that all appropriate job information is available for use

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
2.1 identify job information and documentation that is current and relevant to the work required						
2.2 identify relevant paperwork which can be used to confirm that materials and equipment is of the correct quantity and is free from damage.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

2.1 Job information and documentation:

- Maintenance schedules and specifications
- Maintenance programmes
- Regulatory documents (including current version of the IEE Wiring Regulations)
- Method statements
- Manufacturer’s instructions
- Certificates of competency
- Permits to work

2.2 Relevant paperwork:

- Materials schedules
- Plant and equipment schedules
- Operating instructions

Outcome 3 Be able to use job information to determine work requirements

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
3.1 use job information and documentation to ensure that the following is fit for purpose: <ul style="list-style-type: none"> instruments equipment tools data 						
3.2 use job information to determine the points in the work process where liaison with/coordination of work with other persons will be necessary and record the necessary details						
3.3 demonstrate that job information on key aspects of the work has been issued to relevant people						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

3.3 Relevant people:

- Other workers/colleagues
- Clients

Outcome 4 Be able to comply with appropriate authorisation and reporting procedures which apply when completing initial site inspections

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
4.1 demonstrate that authorisation has been obtained from the relevant person(s) prior to commencement of the work, to ensure safe working practices						
4.2 produce a record of any pre work damage or defects to existing equipment, plant, machinery or building features, and report to job supervisor or line manager						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

4.1 Relevant people:

- Other workers/colleagues
- Clients

Outcome 5 Be able to confirm that planned work meets clients requirements

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
5.1 use appropriate resources to record: <ul style="list-style-type: none"> • client requirements • site instructions. 						
5.2 demonstrate that proposed replacement systems or components comply with industry requirements						
5.3 demonstrate that the client has agreed to the proposed work and given permission for work to commence						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Unit 332

Plan and prepare to maintain electrotechnical systems and equipment (ELTP09a)

Declaration

I confirm that the evidence supplied for the above listed unit is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IQA Name:	
IQA Signature:	
Date:	

Unit 333

Maintain electrotechnical systems and equipment (ELTP09)

Level: 3

Credit value: 4

Recommended GLH: 10

Unit aim

This unit is designed to enable the learner to develop the skills required, and apply the associated knowledge, in order that they are able to demonstrate the competence required to maintain electrotechnical systems and equipment in accordance with approved industry practices, statutory and non-statutory regulations:

- The Electricity at Work Regulations (1989)
- The current edition of BS 7671 Wiring Regulations
- Health & Safety Act (1974)
- Building Regulations (2000)

Learning outcomes

1. Be able to confirm safety of system prior to completion of maintenance in accordance with statutory and non statutory regulations
2. Be able to apply procedures to locate electrical systems and equipment to be maintained
3. Be able to apply procedures to select and use appropriate tools, equipment and materials for maintenance work activities
4. Be able to apply procedures to complete maintenance procedures on electrical systems and equipment
5. Be able to liaise with relevant persons regarding the completion of maintenance activities

Assessment

This unit will be assessed within the workplace.

Evidence requirements

Learning Outcome 1:

- Authorised confirmation that the learner has had involvement and experience in safe-isolation procedures as relevant on two separate occasions.
- Auditable evidence must be provided that the learner has demonstrated that they have competently undertaken a risk assessment on two separate occasions.

Learning Outcomes 2 and 3 – Auditable evidence sourced from a real working environment must be provided to illustrate that the learner has demonstrated on two separate occasions they can plan and prepare to maintain electrotechnical systems and equipment in accordance with the assessment criteria for each of the learning outcomes.

All assessment activities must enable the learner to demonstrate that they understand and can apply the relevant requirements, as appropriate, of:

- the Electricity at Work Regulations (1989)
- the current edition of BS 7671 Wiring Regulations
- Health & Safety Act (1974)
- Building Regulations (2000)
- Management of Health & Safety at Work Regulations
- Reporting of Injuries, Diseases & Dangerous Occurrences Regulations
- Provision & Use of Work Equipment Regulations
- Manual Handling Operations Regulations
- Personal Protective Equipment at Work Regulations
- Work at Height Regulations
- Control of Substances Hazardous to Health Regulations
- Control of Asbestos at Work Regulations.

Unit 333

Maintain electrotechnical systems and equipment (ELTP09)

4 Credits

Outcome 1 Be able to confirm safety of system prior to completion of maintenance in accordance with statutory and non statutory regulations

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
1.1 carry out safe isolation procedures in accordance with regulatory requirements for electrical installations						
1.2 ensure the health and safety of themselves and others within the work location						
1.3 check the safety of electrical systems prior to the commencement of inspection, testing and commissioning.						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 2 Be able to apply procedures to locate electrical systems and equipment to be maintained

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
2.1 interpret maintenance schedules and specifications to accurately identify and locate electrical systems and equipment that is to be worked upon						
2.2 use maintenance instructions to locate correct wiring systems and components that are to be worked upon						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Outcome 3 Be able to apply procedures to select and use appropriate tools, equipment and materials for maintenance work activities

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
3.1 select appropriate tools, equipment and materials for maintenance work						
3.2 use tools, equipment and materials selected for maintenance work, safely and correctly, following: <ul style="list-style-type: none"> • workplace procedures • supplier's instructions • health and safety requirements 						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

3.1 Tools, equipment and materials for maintenance work:

Tools and equipment:

- Hand tools
- Power tools (110V ac or battery operated)
- Portable and fixed lifting equipment
- Access equipment
- Rotating, positioning and straightening devices
- Jacking devices and rams
- Trolleys and hand operated jacks

Material:

- Materials for specific use within maintenance programmes:
 - thermoplastics
 - thermosetting (rubber compounds)
 - fibre glass sleeving
 - varnish (shellac)
 - ceramics
 - metals (conductors and structural)
 - solvents

Outcome 4 Be able to apply procedures to complete maintenance procedures on electrical systems and equipment

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
4.1 select maintenance procedures which comply with: <ul style="list-style-type: none"> • manufacturer’s instructions • industry approved practices • maintenance schedules and specifications and that are appropriate for the type of maintenance activity being undertaken (planned preventative, breakdown, monitored)						
4.2 complete documented maintenance procedures on at least five electrical systems and at least five items of electrical equipment						
4.3 use suitable testing methods to evaluate the performance of all replaced and adjusted electrical systems and equipment, during and on completion of maintenance activities						
4.4 complete all maintenance work activities within the timescale agreed with the client						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

4.2 Electrical systems:

- Three-line four wire distribution systems
- ELV and LV single and multiphase circuits
- Lighting systems
- Heating and ventilating systems
- Air conditioning and refrigeration systems
- Drive systems
- Security systems
- Earthing systems
- Data communication systems

4.2 Items of electrical equipment:

- Electrical plant, components and accessories
- Motors and starters
- Switchgear and distribution panels
- Control systems and components
- Contactors
- Power transmission mechanisms
- Luminaires and lamps

Outcome 5 Be able to liaise with relevant persons regarding the completion of maintenance activities

Assessment criteria (Performance)	Evidence date					
The learner can:	Portfolio reference					
5.1 advise relevant person(s) clearly regarding the potential consequences of carrying out effective repairs						
5.2 identify situations when maintenance activities vary from the agreed schedule and where expected delays in the completion of maintenance work are expected, and notify the relevant person(s) of all implication regarding the changes as appropriate						
5.3 complete maintenance records clearly and accurately and submit them to relevant person(s) in an appropriate, agreed format						
Type of evidence →						
O = Observation WT = Witness Testimony P = Product Q = Questioning PD = Professional Discussion R =Report						

Range

5.2 Relevant person(s):

- Other workers/colleagues
- Clients

Unit 333

Maintain electrotechnical systems and equipment (ELTP09)

Declaration

I confirm that the evidence supplied for the above listed unit is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IQA Name:	
IQA Signature:	
Date:	

Appendix 1 Summary of City & Guilds assessment policies

Health and Safety

All centres have to make sure that they provide a safe and healthy environment for learning, including induction and assessment. City & Guilds external verifiers check this when they visit assessment centres.

Equal Opportunities

Your centre will have an equal opportunities policy. Your centre will explain this to you during your induction, and may give you a copy of the policy.

City & Guilds equal opportunities policy is available from our website www.cityandguilds.com, City & Guilds Customer Relations Team or your centre.

Access to assessment

City & Guilds qualifications are open to all candidates, whatever their gender, race, creed, age or special needs. Some candidates may need extra help with their assessment, for example, a person with a visual impairment may need a reader.

If you think you will need alternative assessment arrangements because you have special needs, you should discuss this with your centre during your induction, and record this on your assessment plan. City & Guilds will allow centres to make alternative arrangements for you if you are eligible and if the qualification allows for this. This must be agreed before you start your qualification.

City & Guilds guidance and regulations document *Access to assessment and qualifications* is available on the City & Guilds website www.cityandguilds.com, from the City & Guilds Customer Relations Team or your centre.

Complaints and appeals

Centres must have a policy and procedure to deal with any complaints you may have. You may feel you have not been assessed fairly, or may want to appeal against an assessment decision if you do not agree with your assessor.

These procedures will be explained during induction and you will be provided with information about the Quality Assurance Co-ordinator within your centre who is responsible for this.

Most complaints and appeals can be resolved within the centre, but if you follow the centre procedure and are still not satisfied you can complain to City & Guilds.

Our complaints policy is on our website www.cityandguilds.com or is available from the City & Guilds Customer Relations Team or your centre.

Useful contacts

UK learners

General qualification information

T: +44 (0)844 543 0033

E: learnersupport@cityandguilds.com

International learners

General qualification information

T: +44 (0)844 543 0033

F: +44 (0)20 7294 2413

E: **intcg@cityandguilds.com**

Centres

Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

E: **centresupport@cityandguilds.com**

Single subject qualifications

Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

F: +44 (0)20 7294 2404 (BB forms)

E: **singlesubjects@cityandguilds.com**

International awards

Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

E: **intops@cityandguilds.com**

Walled Garden

Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

E: **walledgarden@cityandguilds.com**

Employer

Employer solutions, Mapping, Accreditation, Development Skills, Consultancy

T: +44 (0)121 503 8993

E: **business@cityandguilds.com**

Publications

Logbooks, Centre documents, Forms, Free literature

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

If you have a complaint, or any suggestions for improvement about any of the services that City & Guilds provides, email: feedbackandcomplaints@cityandguilds.com

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