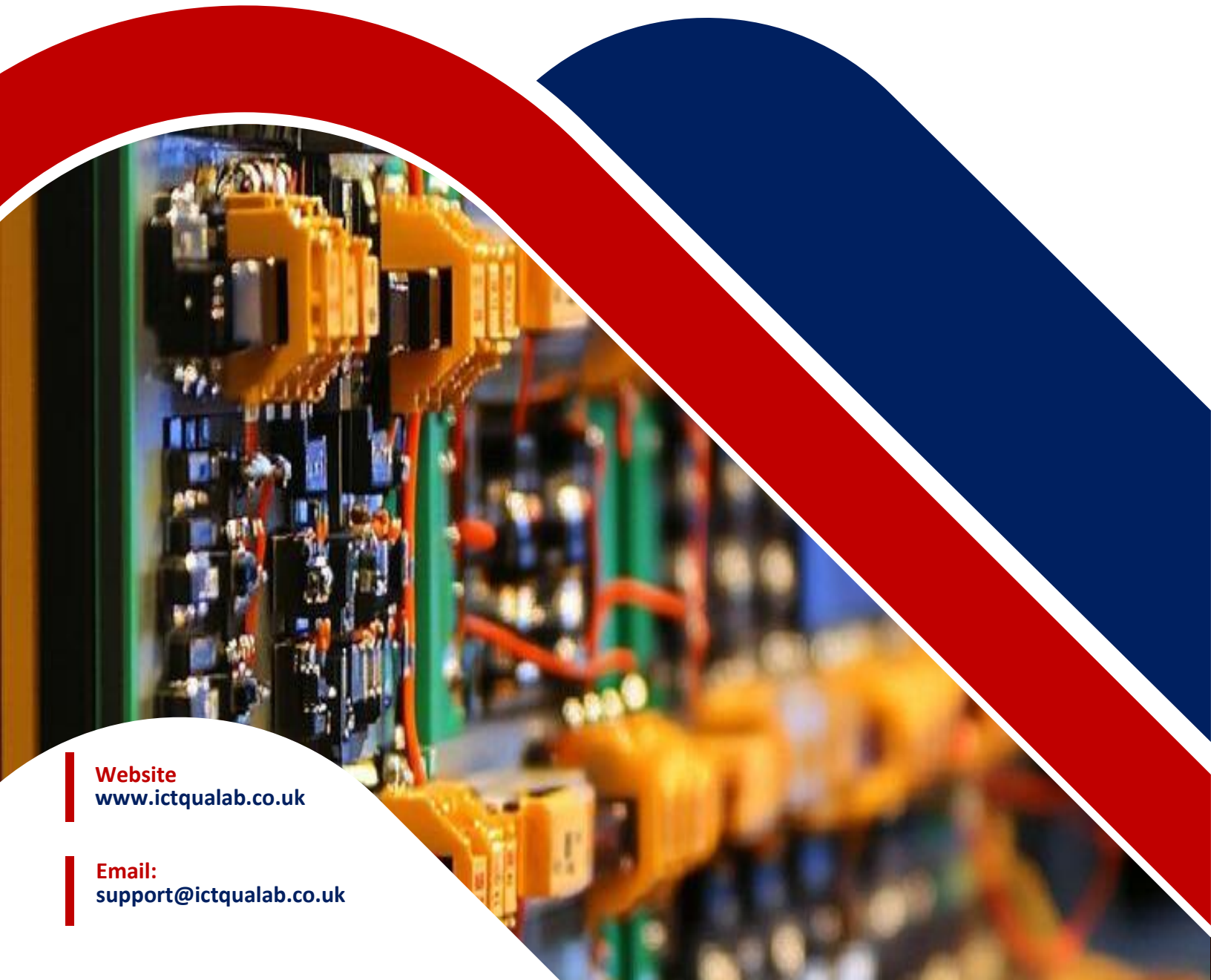


ICTQual AB



Qualification Specification

ICTQual AB Level 3 Diploma in Quality Control / Quality Assurance Electrical



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ICTQual AB's

Level 3 Diploma in Quality Control / Quality Assurance Electrical

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Qualification Specification about

ICTQual AB Level 3 Diploma in Quality Control / Quality Assurance Electrical

About ICTQual AB's

ICTQual AB is a distinguished awarding body based in the United Kingdom, dedicated to fostering excellence in education, training, and skills development. Committed to global standards, ICTQual AB's provides internationally recognized qualifications that empower individuals and organizations to thrive in an increasingly competitive world. Their offerings span diverse industries, including technical fields, health and safety, management, and more, ensuring relevance and adaptability to modern workforce needs.

ICTQual AB's delivers high-quality educational solutions through a network of Approved Training Centres worldwide. Their robust standards and innovative teaching methodologies equip learners with practical knowledge and skills for personal and professional growth. With a mission to inspire lifelong learning and drive positive change, ICTQual AB's continuously evolves its programs to stay ahead of industry trends and technological advancements.

Course Overview

This diploma provides comprehensive knowledge and practical skills related to quality control and quality assurance within the electrical sector. It focuses on developing the candidate's ability to implement, monitor, and improve quality standards in electrical products, components, and processes. The course equips learners with an understanding of quality management principles, electrical safety regulations, testing and inspection techniques, and documentation requirements vital for maintaining high standards in electrical quality assurance. It balances theoretical concepts with applied methodologies to prepare candidates for roles in quality inspection, compliance monitoring, and continuous quality improvement within electrical industries.

The standards and objectives include:

- Understanding fundamental quality control and assurance principles specific to electrical engineering.
- Developing competency in inspection, testing, and verification of electrical components and systems.
- Applying relevant electrical safety and quality regulations to ensure compliance and risk mitigation.

- Mastering documentation and reporting techniques necessary for quality management.

Course Aim

The aim of this course is to equip candidates with the essential knowledge and skills to effectively perform quality control and quality assurance functions in electrical engineering environments. The course seeks to build proficiency in applying quality principles, conducting inspections, ensuring compliance with regulatory requirements, and supporting organisational quality management systems to achieve operational excellence and safety in electrical products and services.

For Whom This Course Is For

This diploma is designed for individuals seeking to build or enhance their career in the electrical industry, particularly in roles related to quality control and quality assurance. It is suitable for:

- Electrical technicians and engineers who want to specialize in quality processes.
- Quality control and assurance personnel working in electrical manufacturing, installation, or maintenance sectors.
- Supervisors and team leaders responsible for monitoring and improving quality standards in electrical operations.
- Individuals aiming to gain formal recognition and certification in electrical quality management.
- Those seeking to understand regulatory compliance and best practices in electrical quality assurance.

Certification Framework

Qualification title	ICTQual AB Level 3 Diploma in Quality Control / Quality Assurance Electrical
Course ID	QC0004
Grading Type	Pass / Fail
Competency Evaluation	Coursework / Assignments / Verifiable Experience
Assessment	The assessment and verification process for ICTQual AB's qualifications involves two key stages:

Internal Assessment and Verification:

- ✓ Conducted by the staff at the Approved Training Centre (ATC) to ensure learners meet the required standards through continuous assessments.
- ✓ Internal Quality Assurance (IQA) is carried out by the centre's IQA staff to validate the assessment process.

External Quality Assurance:

- ✓ Managed by ICTQual AB's verifiers, who periodically review the centre's assessment and IQA processes.
Verifies that assessments are conducted to the required standards and ensures consistency across centres

Entry Requirements

Entry requirements for ICTQual AB Level 3 Diploma in Quality Control / Quality Assurance Electrical may vary depending on the institution offering the program. However, typical entry requirements for such a course may include:

- ✓ Prospective students are typically required to have a minimum educational qualification equivalent to a high school diploma or its international equivalent. Some institutions may require specific coursework in mathematics, physics, or engineering as part of the high school curriculum.
- ✓ While not always mandatory, a background in mechanical engineering or related fields such as manufacturing engineering, industrial engineering, or materials science can be advantageous. Familiarity with engineering principles, materials, and manufacturing processes provides a solid foundation for understanding quality control concepts and methodologies.
- ✓ Strong mathematical and scientific skills are essential for success in quality control in mechanical engineering. Candidates should have a solid understanding of algebra, geometry, calculus, and physics, as these subjects form the basis of many quality control techniques and calculations.
- ✓ Proficiency in the language of instruction, usually English, is often required, as course materials, lectures, and assessments are typically conducted in English. Candidates may be required to provide proof of language proficiency through standardized tests such as the TOEFL or IELTS, especially if English is not their native language.
- ✓ Candidates should possess strong analytical and problem-solving skills to effectively identify, analyze, and address quality-related issues in mechanical engineering processes and products. The ability to think critically, troubleshoot problems, and propose solutions is highly valued in the field of quality control.

Qualification Structure

This qualification comprises 6 mandatory units. Candidates must successfully complete all mandatory units to achieve the qualification.

Mandatory Units	
Unit Ref#	Unit Title
QC0004-01	Fundamentals of Electrical Quality Control
QC0004-02	Electrical Standards and Regulations
QC0004-03	Inspection and Testing Techniques
QC0004-04	Quality Assurance Processes in Electrical Projects
QC0004-05	Defect Management and Root Cause Analysis
QC0004-06	Communication and Documentation in Quality Control

Centre Requirements

To ensure quality training delivery, centres must adhere to the following standards:

1. Centre Approval

- ✓ Centres must be formally approved by ICTQual AB's before delivering this qualification.
- ✓ Approval involves a review of facilities, policies, and staff qualifications.

2. Qualified Staff

- ✓ **Tutors:** Must hold qualifications at least one level higher than the qualification being delivered, in mechanical engineering, quality control, or a related field.
- ✓ **Assessors:** Must hold a recognized assessor qualification (e.g., CAVA, AVRA) or equivalent)
- ✓ **Internal Quality Assurers (IQAs):** Must hold a recognized IQA qualification (e.g. Level 4 Award in the IQA and Level 4 Certificate in Leading the IQA) and experience to oversee assessment standards.

3. Learning Facilities

Centre must offer:

- ✓ Private study areas and internet-enabled workspaces (for blended or physical delivery)
- ✓ Academic and pastoral support for learners
- ✓ Administrative support must be available to manage enrolment, tracking, and learner queries efficiently

4. Health and Safety Compliance

- ✓ All training facilities must comply with health and safety regulations.
- ✓ Centres must conduct regular risk assessments for practical activities.

5. Learning Resources

- ✓ **Course Materials:** Approved textbooks, study guides, and digital content must align with the qualification standards.
- ✓ **Assessment Tools:** Templates and guidelines must be provided to ensure standardized evaluation processes.
- ✓ **E-Learning Support:** Centres offering online or blended learning must implement an effective Learning Management System (LMS).

6. Assessment and Quality Assurance

- ✓ Centres must ensure assessments meet ICTQual AB's competency standards.
- ✓ Internal quality assurance (IQA) must be conducted to maintain consistency.
- ✓ External verifiers from ICTQual AB's will review assessment and training practices.

7. Learning Support

- ✓ **Qualification Guidance:** Support for coursework and assignments.
- ✓ **Career Pathway Assistance:** Information on progression opportunities in sustainability and energy sectors.
- ✓ **Accessibility Support:** Accommodations for learners with disabilities or language barriers.

8. Policies and Compliance

Centres must uphold the following policies in accordance with ICTQual AB's standards:

- ✓ Equality, Diversity, and Inclusion Policy.
- ✓ Health and Safety Policy.
- ✓ Safeguarding and Learner Protection Policy.
- ✓ Complaints and Appeals Procedure.
- ✓ Data Protection and Confidentiality Policy.

9. Reporting Requirements

- Centres must provide ICTQual AB's with regular reports on learner registrations, progress, and certification outcomes.
- Assessment records must be maintained for external auditing and quality assurance purposes.

Support for Candidates

Centres should ensure that materials developed to support candidates:

- ✓ Facilitate tracking of achievements as candidate's progress through the learning outcomes and assessment criteria.
- ✓ Include information on how and where ICTQual AB's policies and procedures can be accessed.
- ✓ Provide mechanisms for Internal and External Quality Assurance staff to verify and authenticate evidence effectively.

This approach ensures transparency, supports candidates' learning journeys, and upholds quality assurance standards.

Assessment

This qualification is competence-based, requiring candidates to demonstrate proficiency as defined in the qualification units. The assessment evaluates the candidate's skills, knowledge, and understanding against the set standards. Key details include:

1. Assessment Process:

- ✓ Must be conducted by an experienced and qualified assessor.
- ✓ Candidates compile a portfolio of evidence that satisfies all learning outcomes and assessment criteria for each unit.

2. Types of Evidence:

- ✓ Observation reports by the assessor.
- ✓ Assignments, projects, or reports.
- ✓ Professional discussions.
- ✓ Witness testimonies.
- ✓ Candidate-produced work.
- ✓ Worksheets.
- ✓ Records of oral and written questioning.
- ✓ Recognition of Prior Learning (RPL).

3. Learning Outcomes and Assessment Criteria:

- ✓ **Learning Outcomes:** Define what candidates should know, understand, or accomplish upon completing the unit.
- ✓ **Assessment Criteria:** Detail the standards candidates must meet to demonstrate that the learning outcomes have been achieved.

This framework ensures rigorous and consistent evaluation of candidates' competence in line with the qualification's objectives.

Unit Descriptors

QC0004-01-Fundamentals of Electrical Quality Control

This unit introduces the basic ideas and principles behind quality control in the electrical field. It explains why quality is important for electrical products and services and how maintaining good quality helps to ensure safety, reliability, and customer satisfaction. Learners will explore key concepts such as quality management, quality standards, and the roles of quality control in electrical work. The unit also covers how quality control fits into the overall electrical industry and its impact on business success.

Learning Outcome:

Assessment Criteria:

- | | |
|---|---|
| 1. Understand the core principles of quality control in electrical systems. | <ul style="list-style-type: none">1.1 Define quality control and explain its role in ensuring the safety and functionality of electrical systems.1.2 Outline three key principles of electrical quality control, providing an example for each.1.3 Identify and describe a minimum of four stages in an electrical project where quality control is vital, such as material procurement, installation, and final testing.1.4 Discuss the potential legal, financial, and safety consequences that can arise from a lack of quality control in electrical installations. |
| 2. Identify the role of quality control in ensuring product and service reliability. | <ul style="list-style-type: none">2.1 Explain how the inspection and testing activities of quality control directly improve the long-term reliability of electrical products.2.2 Describe how quality control procedures, such as routine maintenance checks, contribute to the consistent reliability of electrical services.2.3 Provide two specific, detailed examples of how quality control prevents common service disruptions, such as power outages or system failures.2.4 Outline the relationship between the implementation of quality control measures and the extended operational lifespan of electrical components. |
| 3. Differentiate between quality control and quality assurance in electrical projects. | <ul style="list-style-type: none">3.1 Provide separate, accurate definitions for quality control and quality assurance.3.2 Give three distinct examples of activities that are part of quality control, such as conducting a continuity test.3.3 Give three distinct examples of activities that are part of quality assurance, such as creating a project-specific inspection plan.3.4 Compare and contrast the objectives and timing of quality control and quality assurance activities across the project lifecycle. |

3.5 Explain how QC and QA function together to achieve a comprehensive quality management system.

QC0004-02-Electrical Standards and Regulations

This unit focuses on the main rules, standards, and regulations that apply to electrical work. Learners will study national and international electrical standards that must be followed to ensure safety and compliance. The unit covers legal requirements, health and safety legislation, and industry codes of practice that guide electrical quality control. Understanding these regulations helps learners ensure that electrical products and installations meet legal and quality requirements.

Learning Outcome:

Assessment Criteria:

1. Understand the importance of adhering to electrical standards and regulations.

- 1.1 Explain three primary reasons for the existence of electrical standards and regulations, focusing on safety, performance, and legal compliance.
- 1.2 Discuss two significant risks, such as legal penalties or equipment damage, associated with non-compliance.
- 1.3 Describe how following standards directly influences both the safety and performance of an electrical system.
- 1.4 Differentiate clearly between a voluntary standard and a mandatory regulation in the context of an electrical installation.

2. Identify key national and international standards applicable to electrical installations.

- 2.1 Name at least two national and two international electrical standards organizations and explain their primary function.
- 2.2 List and describe the purpose of three specific standards relevant to electrical installations, such as those governing wiring practices or component safety.
- 2.3 Explain the process for locating and interpreting key sections of a standard document.
- 2.4 Accurately identify which standards apply to different types of electrical projects (e.g., residential vs. industrial).

3. Ensure compliance with regulatory requirements during electrical projects.

- 3.1 Describe a systematic process for identifying all applicable regulatory requirements at the beginning of a project.
- 3.2 Create a detailed checklist to verify compliance with a specified electrical regulation.
- 3.3 Explain the step-by-step procedure for addressing and rectifying a non-compliance issue once it has been identified.

- 3.4 Identify the specific roles and responsibilities of key project members in ensuring and verifying compliance.

QC0004-03- Inspection and Testing Techniques

In this unit, learners will study the practical methods used to check and test electrical systems and components. It covers different types of inspection, including visual checks and measurements, as well as electrical testing procedures to find faults or defects. The unit explains how to use tools and equipment safely and accurately, interpret test results, and decide when repairs or improvements are needed. This helps ensure electrical work meets required quality standards.

Learning Outcome:	Assessment Criteria:
1. Perform inspections to identify defects and non-conformities in electrical systems.	<div>1.1 Accurately identify and describe four common types of visual defects in electrical components, providing examples for each.</div> <div>1.2 Systematically conduct a visual inspection of a sample electrical installation using a provided checklist.</div> <div>1.3 Document at least three non-conformities found during an inspection using a standardized form.</div> <div>1.4 Provide a clear explanation of the difference between a defect (a flaw) and a non-conformity (a deviation from a standard).</div>
2. Apply various testing techniques to ensure electrical system performance and safety.	<div>2.1 Select the correct testing equipment for three different electrical tests, justifying each choice.</div> <div>2.2 Successfully perform two different electrical tests (e.g., continuity and insulation resistance) and accurately record the results.</div> <div>2.3 Describe the critical safety precautions that must be taken before, during, and after performing any electrical test.</div> <div>2.4 Explain the process for calibrating a testing instrument and describe the importance of calibration for result accuracy.</div> <div>2.5 Interpret and compare test results against predefined standards and tolerances to determine compliance.</div>
3. Document inspection and testing results in line with quality control protocols.	<div>3.1 Complete a comprehensive inspection report, including all required fields and observations.</div> <div>3.2 Record test results accurately, including all necessary metadata such as date, time, and the technician's signature.</div> <div>3.3 Demonstrate the use of a digital tool or system to log and store inspection and test data.</div>

3.4 Explain the importance of maintaining accurate and timely documentation for legal, historical, and traceability purposes.

QC0004-04- Quality Assurance Processes in Electrical Projects

This unit explains how to plan and carry out quality assurance throughout an electrical project. It covers the steps taken to monitor quality at different stages, from design and installation to final testing. Learners will understand how to implement quality systems and procedures that prevent problems before they happen. The unit also covers how to carry out audits and reviews to maintain quality and improve processes over time.

Learning Outcome:

Assessment Criteria:

1. Understand the key processes involved in quality assurance for electrical projects.

- 1.1 Define the purpose of a Quality Assurance Plan (QAP) and explain its scope.
- 1.2 Identify and describe four key components of a QAP, such as quality policies, procedures, and responsibilities.
- 1.3 Explain the fundamental difference between quality control (checking the product) and quality assurance (checking the process) activities in an electrical project.
- 1.4 Describe how a QAP is integrated into the overall project management plan to ensure a holistic approach to quality.
- 1.5 Explain the purpose and key steps of a quality audit within a QA process.

2. Implement quality assurance procedures to maintain high standards in electrical work.

- 2.1 Develop a comprehensive QA checklist for a specific electrical installation task, such as wiring a control panel.
- 2.2 Describe the step-by-step process for implementing a new QA procedure from its initial planning to final execution and review.
- 2.3 Provide two specific examples of how QA procedures ensure the correct and approved materials are used in an electrical project.
- 2.4 Explain the importance of technician training and competency in the successful implementation of QA procedures.

3. Conduct internal audits to assess and improve QA processes.

- 3.1 Describe the key steps involved in planning an internal QA audit, from setting the scope to scheduling and resource allocation.
- 3.2 Use an audit checklist to perform a basic internal audit on a provided sample project scenario.
- 3.3 Document the findings of the audit clearly and identify at least two specific areas for improvement.

- 3.4 Present the audit findings and constructive recommendations to a hypothetical group of stakeholders.

QC0004-05-Defect Management and Root Cause Analysis

This unit teaches learners how to deal with faults or defects found in electrical work. It explains methods to identify, record, and classify defects to understand their impact on quality. Learners will learn how to investigate and find the root causes of problems using simple analysis techniques. The unit also covers how to recommend and apply corrective actions to stop defects from happening again and improve overall quality.

Learning Outcome:	Assessment Criteria:
1. Identify and classify defects in electrical components and systems.	<div>1.1 Define a defect and provide three specific examples related to electrical systems, such as a loose connection or incorrect polarity.</div> <div>1.2 Classify three different defects into categories (e.g., critical, major, minor) based on their potential impact.</div> <div>1.3 Accurately use a defect tracking log to record the details of a newly identified defect.</div> <div>1.4 Explain the immediate, specific actions that must be taken upon the discovery of a critical defect.</div>
2. Use root cause analysis techniques to determine the underlying causes of defects.	<div>2.1 Explain the purpose of root cause analysis (RCA) in the context of quality control.</div> <div>2.2 Apply a simple RCA technique (e.g., 5 Whys) to a provided hypothetical electrical defect to identify a potential root cause.</div> <div>2.3 Identify at least two distinct potential root causes for a given electrical defect and justify each one.</div> <div>2.4 Differentiate clearly between a symptom (the visible problem) and a root cause (the underlying reason).</div> <div>2.5 Document the findings of a root cause analysis in a clear and structured manner.</div>
3. Develop corrective and preventive actions to address defects and prevent recurrence.	<div>3.1 Distinguish between a corrective action (fixing the current problem) and a preventive action (avoiding future problems).</div> <div>3.2 Propose a specific and effective corrective action for a provided defect.</div> <div>3.3 Develop a detailed preventive action to avoid the recurrence of a previous defect.</div> <div>3.4 Describe a process for verifying that a implemented corrective action has been effective.</div>

QC0004-06-Communication and Documentation in Quality Control

This unit focuses on the importance of clear communication and accurate documentation in quality control. Learners will study how to prepare and manage quality reports, inspection records, and compliance documents. The unit covers effective ways to communicate quality issues to team members, supervisors, and clients, ensuring everyone understand the quality status and any actions needed. Good documentation helps track quality performance and supports continuous improvement.

Learning Outcome:	Assessment Criteria:
1. Understand the importance of effective communication in quality control.	<ul style="list-style-type: none">1.1 Explain three reasons why clear communication is essential for maintaining quality in a team environment.1.2 Identify the key stakeholders involved in QC communication for an electrical project.1.3 Describe a formal process for escalating a critical quality issue to management.1.4 Explain how a specific example of miscommunication can lead to a quality failure.
2. Prepare clear and concise quality control documentation, including reports and records.	<ul style="list-style-type: none">2.1 Complete a quality control report with all necessary components, including findings and recommendations.2.2 Draft a non-conformance report for a specific defect, ensuring all required details are included.2.3 Prepare a daily QC log using a standardized format to track activities and observations.2.4 Explain the importance of accurate, legible, and timely documentation for legal, historical, and traceability purposes.2.5 Clearly distinguish between a quality control report and a quality control record.
3. Use digital tools to manage and store QC/QA documentation efficiently.	<ul style="list-style-type: none">3.1 Describe two distinct benefits of using a digital system for QC/QA documentation.3.2 Demonstrate the use of a provided digital platform to upload, retrieve, and share QC reports.3.3 Explain how a version control system within a digital platform helps manage changes to documents.3.4 Describe a process for ensuring the security and regular backup of all digital QC/QA documents.

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