Unit ID: 2500

Domain ELECTRICAL ENGINEERING- CORE

Title: Use test equipment for electrical measurements

Level: 2 **Credits: 4**

Purpose

This unit standard is intended for those who use test equipment for electrical measurements. People credited with this unit standard are able to select and prepare test equipment to perform electrical tests; use electro-technology test equipment to test systems and components; apply measuring techniques for electro-technology quantities; and maintain and handle test equipment.

This unit standard is intended for those who work in the electrical environment.

Special Notes

1. Entry information:

   Prerequisite
   - *Unit 1157 – Demonstrate basic knowledge of workplace health and safety*

2. Assessment evidence may be collected from a real workplace or a simulated workplace environment in which Electrical operations are carried out.

3. Glossary of terms
   - *'SANS'* refers to South Africa National Standards

4. Application of test equipment may include but not limited to tests for resistance, dc and ac voltage and current, battery, basic electronic components and continuity testing, frequency and insulation.

5. Incorrect use may include but not limited to polarity reversal, use of wrong test equipment, incorrect connection to the circuit, incorrect range, incorrect scale selection, open circuit fuse in fused lead, broken test lead and open circuit test lead.

6. Regulations and legislation relevant to this unit standard include the following:

   - Labour Act, No. 11, 2007.
   - Regulations relating to the health & safety of employees at work under Schedule 1 (2) of the Labour Act No.11 of 2007
   - SANS 10142-1.
   - Namibia Electricity Safety Code 2009: Electricity Act 4, 2007 and all subsequent amendments.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority. All approved unit standards, qualifications and national assessment arrangements are available on the Namibia Training Authority website www.nta.com.na.

Elements and Performance Criteria

Element 1: Select and prepare test equipment to perform electrical tests

Performance Criteria

1.1 System and/or component test requirements are identified.

1.2 Test equipment are selected in accordance with the measurement requirements.

1.3 Test equipment are checked for serviceability and applicable leads are fitted where required.

1.4 Function and range of measurement is selected in accordance with the measurement requirements.

1.5 Calibration and/or zeroing is performed prior to measurements in order to validate readings where applicable.

Element 2: Use electro-technology test equipment to test systems and components

Range

Test equipment may include but not limited to multimeters, function generators, bench power supplies, oscilloscopes, hydrometer, load tester, logic probes, analogue or digital and wattmeter.

Performance Criteria

2.1 Test points and polarity are determined.

2.2 Correct range scales are selected for the tests.

2.3 Test equipment are used in line with manufacturers' instructions.

2.4 Measurements for required parameters are recorded and percentage of errors are calculated in line with industry practice and safety procedures.

2.5 The approximate tolerance for each measurement is explained according to industry practice.

2.6 Data sheets are correctly used to identify component characteristics and generic equivalent components.

2.7 Results of measurements are recorded in accordance with industry procedures.

Element 3: Apply measuring techniques for electro-technology quantities

Performance Criteria

3.1 Voltage, current and resistance measuring techniques are applied using a multimeter.

3.2 Measurements of different waveforms, frequencies, and voltages using an oscilloscope are applied with examples.

3.3 Knowledge of the power supplies is applied for testing.

3.4 Use of function generators in proving specific frequencies and waveforms is applied by means of signal measurements.

Element 4: Maintain and handle test equipment

Performance Criteria

4.1 Test equipment are handled with care.

4.2 Test equipment are set up in line with safety procedures.

4.3 Test equipment are securely stored in dust-free, dry storage.

4.4 Test equipment are calibrated for accuracy checks as required by standard procedures.

Registration Data

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Body responsible for review:	Namibia Training Authority