Unit ID: E07

Domain **ELECTRONICS**

Title: **Demonstrate introductory knowledge of circuit concepts and measurements for electronic**

Level: 1 **Credits: 4**

Purpose

This unit standard specifies the competencies required to demonstrate introductory knowledge of circuit concepts and measurements for electronic. It include explaining and defining electrical parameters, explaining the concept of an electric circuit, using a multi-meter to make electrical measurements. This unit standard is intended for those who work in electronics industry.

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 or a simulated workplace in which electronics operations are carried out.

3. The evidence required to demonstrate competency in this unit standard must be relevant to workplace operations

4. Glossary of terms:
   - *"parameters"* refers to charge, current, voltage, resistance, work (energy change), and power
   - IEC 60617- **International Electro-technical Commission** deals with Graphical Symbols for Diagrams
   - IEEE- Institute of Electrical and Electronics Engineers.

5. Performance of all elements in this unit standard must comply with industry standards.

6. Regulations and legislation relevant to this unit standard include the following:
   - Labour Act, No. 11, 2007.
   - Occupational Health and Safety Regulations No. 18, 1997 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 on www.nta.com.na.

Elements and Performance Criteria

Element 1: Explain and define electrical parameters

Performance Criteria

1.1 Electric charge is explained in terms of electrons and examples of charged bodies are given.

1.2 Electric current is defined in terms of electric charge and time, and the units stated.

1.3 Potential Difference (P.D.) or voltage is defined in terms of energy and charge, and the units stated.

1.4 Ohm's Law is stated with units, and the effect of a change in any one quantity on the other two is described.

1.5 Power is calculated in terms of work done in unit time and in terms of heat dissipated in a resistance.

.

Element 2: Explain the concept of an electric circuit

Performance Criteria

2.1 Connection of battery, wires, insulation, and resistances to form a circuit is explained in the context of flow of charge, voltage, current, and power.

2.2 Conventional and electronic directions of current flow are explained.

2.3 Voltage levels are indicated on a diagram of the circuit.

Element 3: Use a multi-meter to make electrical measurements

Range

Multimeter include digital or analogue
Measurements refers to voltage, current, resistance

Performance Criteria

3.1 Precautions in the use of the instrument are described with respect to personal safety, damage to the instrument, damage to the circuit being measured, and battery life.

3.2 Purpose and operation of different meter ranges are explained, with reference to measurement accuracy.

3.3 Measurements state quantity and units, and a use optimum meter range is explained.

3.4 Use of the instrument to check electrical continuity is demonstrated.

Registration Data

Subfield:	Electrical Engineering
Date first registered:	
Date this version registered:	
Anticipated review:	
Body responsible for review:	Namibia Training Authority