Unit ID: 872

Domain **ELECTRICAL ENGINEERING - CORE**

Title: **Demonstrate knowledge of basic electronic components and circuits**

Level: 2 **Credits: 3**

Purpose

This unit standard is intended for those who demonstrate knowledge of basic electronic components and circuits. People credited with this unit standard are able to identify basic electronic components and their common uses; demonstrate knowledge of electronic circuits; calculate basic electrical quantities; and demonstrate knowledge of circuit boards and Printed Circuit Board (PCB) production.

This unit standard is intended for those who work in electrical workplace 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. Performance of all elements in this unit standard must comply with manufacturers' specifications and workplace specific requirements.

4. Glossary of terms:

   - *'SANS'* refers to South Africa National Standards
   - '*IEC'* refers to International Electrotechnical Commission

5. 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 and all subsequent amendments.
   - SANS 10142-1
   - IEC 61360

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: Identify basic electronic components and their common uses

Range

Components may be identified by inspection of given components, selection from a physical or pictorial display and manufacturers' data. Basic electronic components may include but not limited to resistors, capacitors, inductors, diodes, transistors, cathode ray tube (CRT), thyristors, transformers and integrated-circuits (ICs).

Performance Criteria

1.1 Electronic components are identified.

1.2 Characteristic of components are explained.

1.3 Functions of various electronic components are described.

1.4 Drawing symbols are identified.

1.5 Common application for each component is explained.

Element 2: Demonstrate knowledge of electronic circuits

Performance Criteria

2.1 Various electronic circuits are identified.

2.2 Basic configurations of electronic circuits are described.

2.3 Functioning of different electronic circuit is explained.

Element 3: Calculate basic electrical quantities

Range

Calculations may include but not limited to circuits in series, parallel and series-parallel.

Quantities include but not limited to current, voltage, resistance and power values.

Calculations are not limited to use of Ohm's law and Kirchhoff's law.

Performance Criteria

3.1 Electrical quantities, units and symbols are explained.

3.2 Current, voltage, resistance and power in a series circuit are calculated.

3.3 Current, voltage, resistance and power in a parallel circuit are calculated.

3.4 Current, voltage, resistance and power in a series-parallel circuit are calculated.

3.5 Electro-motive force (emf), potential difference and internal resistances are calculated.

3.6 Power dissipation in various electronic circuits is calculated across individual components and the complete circuit.

Element 4: Demonstrate knowledge of circuit boards and Printed Circuit Board (PCB) production

Range

Circuit board may include but not limited to raster boards, veroboards, soldering strips, tag raster boards and PCBs

Performance Criteria

4.1 Various types of circuit boards used in the field of electronics are identified and explained.

4.2 Principle of production of printed circuit board is explained.

4.3 Steps to produce a single printed circuit board are demonstrated.

4.4 Printed circuit board design is explained in terms of the impact of imaging and etching methods.

Registration Data

Subfield:	Electrical Engineering
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