APPLY BASIC ELECTRONIC SKILLS

UNIT CODE: CT/OS/CS/CC/01/6/B

Unit description

This unit specifies the competencies required to apply basic electronics skills. It involves identifying electric circuits and electronic components, understanding semi-conductor theory, identifying and classifying memories, applying number systems and binary coding and identifying emerging trends in electronics.

ELEMENTS AND PERFORMANCE CRETIRIA

ELEMENT These describe the **key outcomes** which make up **workplace function**.	PERFORMANCE CRITERIA These are **assessable** statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the range.***
1. Identify electrical circuits	1.1 Electrical circuit are identified 1.2 ***Electrical quantities and their units*** are identified 1.3 ***Types of electrical circuits*** are identified
2. Identify electronic components	2.1 Identification of electrical components is done 2.2 Characteristic of electronic components are identified 2.3 Application of electronic components are Identified 2.4 Characteristics of integrated circuit are identified
3. Understand semi-conductor theory	3.1 Explanation of semiconductor theory is done 3.2 Structure of matter is described 3.3 Electrons in conductors and semiconductors are explained 3.4 Types of semiconductor materials are identified 3.5 P-type and N-type materials are explained

	3.6 Description of P-N junction diodes operations is done 3.7 **Types and operations of transistors** are identified
4. Identify and classify memory	4.1 **Types of memories** are identified 4.2 Memory hierarchy is identified 4.3 **Levels of memory storage** are identified 4.3 **Classification of memories** is done
5. Apply number systems and binary coding	2.1 **Types of number systems** are identified 2.2 Base conversion is done 2.3 Binary arithmetic operations are done 2.4 **Binary codes** are identified 2.5 Representation of decimals in BCD is done 2.6 BCD arithmetic are performed
6. Identify emerging trends in Electronics	6.1 Description of emerging trends is done 6.2 Challenges of emerging trends are explained 6.3 Explanation on coping with the emerging trends is done

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

Variable	Range
Electrical quantities and their units may include but is not limited to:	E.M.F in volts • Power in watts • Energy in joules • Resistance in ohms • Current in amperes
Types of electrical circuits may include but is not limited to:	• AC – Alternating Current • DC – Direct Current
Types and operations of transistors may include but is not limited to:	• Types • PNP • NPN

Variable	Range

	• Operations
	   • Forward biasing
	   • Reverse Biasing

Types of memories may include but is not limited to:	• Semi-conductor • Magnetic • Optical
Levels of memory storage may include but is not limited to:	• Internal • Main • Online • Offline bulk
Classification of memories may include but is not limited to:	• RAM • ROM
Types of number systems may include but is not limited to:	• Decimal • Binary • Octal • Hexadecimal • Binary Arithmetic's
Binary codes may include but is not limited to:	• 8421 BCD • Excess 3 • BCD arithmetic's

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required skills

The individual needs to demonstrate the following skills:

- Communications (verbal and written);
- Proficient in ICT
- Time management
- Problem solving
- Decision making
- First aid

Required knowledge

The individual needs to demonstrate knowledge of:

- Electrical Components
- Electrical Quantities and units of measurement

- Electrical circuits
- Semiconductor theory
- Number systems
- Types of Computer memories

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and understanding and range.

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Identified Electrical Components, quantities and their units of measurement 1.2 Constructed a simple circuit 1.3 Identified types of transistors and their operations 1.4 Categorized the memories according to their levels, types and hierarchy 1.5 Identified the number systems, binary codes and their operations.
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace where assessment can take place 2.2 Appropriately simulated environment where assessment can take place
3. Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Practical demonstration
4. Context of Assessment	Competency may be assessed 4.1 Off the job 4.2 on the job 4.3 During industrial attachment
5. Guidance information for assessment	5.1 Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.