APPLY BASIC ELECTRONICS

UNIT CODE: ICT/OS/IT/CC/01/5/B

UNIT DESCRIPTION

This unit specifies the competencies required to demonstrate basic skills of electronics. It involves identification of electric circuits, electronic components, understand semi-conductor theory, identify and classify memories, apply number systems and identify 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 4.4 ***Classification of memories*** is done

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.***
5. Apply Number Systems and binary coding	5.1 ***Types of number systems*** are identified 5.2 Base conversion is done 5.3 Binary arithmetic operations are done 5.4 ***Binary codes*** are identified 5.5 Representation of decimals in BCD is done 5.6 BCD arithmetic are performed
6. 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 environments and situations that will affect performance.

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

3. Types and operations of transistors	• Types
	  o PNP
	  o NPN
	• Operations
	  o Forward biasing
	  o Reverse Biasing

4. Types of memories	• Semi-conductor • Magnetic • Optical
5. Classification of memories	• RAM • ROM
6. Levels of memory storage	• Internal

Variable	Range *May include but is not limited to:*
	• Main • Online • Offline bulk
7. Types of number systems	• Decimal • Binary • Octal • Hexadecimal • Binary Arithmetic's
8. Binary codes	• 8421 BCD • Excess 3 • BCD arithmetic's

REQUIRED KNOWLEDGE AND UNDERSTANDING

The individual needs to demonstrate knowledge and understanding of:

- Electrical Components
- Electrical Quantities and units of measurement
- Electrical circuits
- Semiconductor theory
- Number systems
- Types of Computer memories

FOUNDATION SKILLS

The individual needs to demonstrate the following foundation skills:

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

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 must be provided: 2.1 Resources same as that of workplace are advised to be applied 2.2 Including resistors, transistors, soldering wire, soldering Iron, printed circuit board, ammeter, voltimeter, connecting wires, wire stripper, pliers, wire cutter, screw driver, driller, clamps, vise
3. Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Practical demonstration
4. Context of Assessment	4.1 Competency may be assessed individually in the actual workplace and simulated setting of the actual work place
5. Guidance information for assessment	5.1 Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.