APPLY ELECTRICAL PRINCIPLES I

UNIT CODE:0713441 12A

TVET CDACC UNIT CODE: ENG/OS/MDE/CC/06/5/MA

UNIT DESCRIPTION

This unit describes competences required to apply electrical principles. Competences include applying electrical quantities, using cells and batteries and applying concepts of dc circuits.

ELEMENTS AND PERFORMANCE CRITERIA

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. Apply Electrical quantities	1.1 Electrical quantities and units are identified as per SI systems. 1.2 Calculations involving various electrical quantities are performed as per formula. 1.3 Electrical quantities measuring instruments are identified as per IEC standards.
2. Use cells and batteries	2.1 Simple cells are constructed as per work procedure. 2.2 ***Types of cells and batteries*** are identified as per work requirement. 2.3 E.M.F and internal resistance of cells is determined as per the measurement. 2.4 Maintenance of batteries is carried out based on manufacturer's specification. 2.5 Applications of batteries are identified as per work requirement.
3. Apply DC circuit	3.1 Resistance and resistivity is determined in DC circuit as per IEC standards. 3.2 Calculations involving parallel and series circuits are performed based on DC circuit.

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)***
	3.3 Calculations involving ***DC theorems*** are performed based on DC circuit.

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
1. ***Types of cells and batteries*** may include but not limited to:	• Dry cells • Leclanché • Mercury • Lead-acid • Alkaline • Lithium
2. ***DC theorems*** may include but not limited to:	• Kirchhoff's theorem • Superposition theorem • Thevenin's theorem • Norton theorem • Maxwell theorem

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:

- Apply basic Electrical formulas

- Use of basic Electrical instruments
- Perform various unit conversions of Electrical quantities
- Power factor correction
- logical thinking
- problem solving
- applying statistics
- drawing graphs
- Using different measuring tools

Required knowledge

The individual needs to demonstrate knowledge of:

- Electrical power calculations
- Various laws in Electrical engineering
- Electrical formulas
- Power triangle
- SI units of various electrical parameters
- Selecting the correct type of electrical machines for various uses
- Types and purpose of measuring instruments
- Units of measurement and abbreviations

EVIDENCE GUIDE

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

1 Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Applied the correct SI units of Electrical quantities. 1.2 Constructed simple cells as per work procedure. 1.3 Identified primary and secondary cells. 1.4 Maintained batteries based on manufacturer's specification. 1.5 Applied DC circuit theory concepts.

2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Measuring equipment 2.3 Materials relevant to the proposed activity or tasks
3. Methods of Assessment	Competency may be assessed through: 3.1 Practical 3.2 Project 3.3 Third party report 3.4 Portfolio of evidence 3.5 Written tests 3.6 Oral questioning
4. Context of Assessment	Competency may be assessed in a workplace or a simulated workplace.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.