REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR

ELECTRICAL ENGINEERING TECHNICIAN (POWER OPTION)

KNQF LEVEL: 6

ISCED OCCUPATIONAL STANDARD CODE: 0713 554B

TVET CDACC
P.O BOX 15745-00100
NAIROBI

DEMONSTRATE UNDERSTANDING OF POWER GENERATION

UNIT CODE: ENG/OS/PO/CR/10/6/B

UNIT DESCRIPTION

This unit covers the competencies required to demonstrate understanding of power generation. Competencies includes; Identifying types of generating station, demonstrate understanding of power generating station layout, demonstrate understanding in the operation of generating station, demonstrate understanding in the operating sequence of generating station.

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 italicised terms are elaborated in the Range)***
1. Identify types generating stations	1.1 Generating stations are identified as per their source energy 1.2 Generating stations are situated as in line with their source energy
2. Demonstrate understanding of Power generating station layout	2.1 Layout of generating station is established as per the source energy 2.2 Layout is determined by the expected plant output 2.3 Layout of the generating station is determined by the safety involved.
3. Demonstrate understanding in the operation of generating station	3.1 Constituents of the generating station are determined by the type of the generating station 3.2 Operation of the constituent components in generating stations is determined by their standard operating procedure. 3.3 Energy is converted from one form to another in line with the operation of the constituent components of the plant.
4. Demonstrate understanding in the operating sequence of generating station	4.1 Operating sequence of the generating station is determined by the energy flow. 4.2 Operating sequence is determined by the type of generation stations

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 italicised terms are elaborated in the Range)***
	4.3 Operation sequence will be determined by the components used in the generating station

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.Materials may include but is not limited to:	• Insulators • Conductors • Semiconductors
2. Diodes may include but is not limited to:	• Photo diodes • Laser • Zener diodes • Light emitting diode • Schottky diodes
3. Transistors may include but is not limited to:	• BJTs • FETs
4. Biasing may include but is not limited to:	• Forward bias • Reverse bias
5. Amplifiers may include but is not limited to:	• RC coupled amplifiers • Small signal amplifiers • Power amplifiers

Variable	Range
	• Tuned amplifier • Wide band amplifiers • Op-Amp amplifiers
6. Oscillators may include but is not limited to:	• Tuned collector • RC phase shift • Colpits • Hartley • Crystal • Blocking

REQUIRED KNOWLEDGE AND UNDERSTANDING

The individual needs to demonstrate knowledge and understanding of:

- The manufacturer's warranty requirements relating to electronic materials
- The legal and statutory requirements relating to Electronics
- workplace procedures relevant to:
    - Health and safety;
    - The environment (including waste disposal);
    - Appropriate personal and protective equipment;
- Workplace procedures for:
  - Appropriate use of tools and equipment;
  - Electronics operations
  - Reporting of technical challenges
- The importance of documenting Electronics operations manuals
- The importance of working within agreed timelines and sharing progress reports.
- The relationship between time and costs.
- The importance of reporting anticipated delays to relevant parties promptly.
- How to find, interpret and use sources of technical information for project activities
- The importance of using the correct sources of technical information.

FOUNDATION SKILLS

The individual needs to demonstrate the following foundation skills:

- Amplifier construction
- Communications (verbal and written);
- Proficient in ICT;
- Time management;
- Analytical
- Problem solving;
- Planning;
- Decision making;
- First aid;
- Electronics biasing

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 different semiconductor material 1.2 Demonstrated understanding in biasing of semiconductor materials 1.3 Identified special semiconductor devices 1.4 Performed forward and reverse biasing of semiconductor materials 1.5 Identified different types of transistors 1.6 Classified various types of oscillators 1.7 Identified various types of opto-electronics semiconductors
2. Resource Implications	***The following resources must be provided:*** 2.1 Stationeries 2.2 Reference materials 2.3 Practical materials 2.4 Measuring instruments 2.5 Tools Resources the same as that of workplace are advised to be applied
3. Methods of Assessment	**Competency may be assessed through:** 3.1 Oral test

	3.2 Written test 3.3 Observation 3.4 Practical demonstration
4. Context of Assessment	Competency may be assessed 4.1 On job 4.2 Off job 4.3 During Industrial Attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.