PERFORM ELECTRICAL AND ELECTRONICS CIRCUITRY

UNIT CODE:ENG/OS/RAC/CC/02/4/A

UNIT DESCRIPTION

This unit describes the competencies required to perform electrical and electronic circuitry. It entails identifying electrical and electronic components, interpreting electrical and electronic circuits, troubleshooting faults in electrical and electronic circuits and applying concepts of DC and AC components and 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. Identify electrical and electronics components	1.1 Safe working practices are observed throughout the task as per work place procedures 1.2 Basic ***SI unit***s in Electrical are identified 1.3 ***Electrical and electronic components*** are named 1.4 Power control ***safety devices*** are identified 1.5 Housekeeping is carried out as per work place procedure
2. Interpret technical drawings	2.1 Technical drawing symbols are identified 2.2 Technical drawing circuits are interpreted 2.3 Orthographic projections are identified 2.4 Orthographic projections are drawn
3. Interpret electrical and electronic circuits	3.1 Safe working practices are observed throughout the task as per work place procedures 3.2 Electrical, electronic and drawing symbols are interpreted 3.3 Building blocks of electrical and electronic circuits are identified 3.4 Manufacturers manuals and catalogues are used as per the task requirement 3.5 Housekeeping is carried out as per work place procedure
4. Troubleshoot electrical and electronic circuits faults	4.1 Safe working practices are observed throughout the task as per work place procedures 4.2 Electrical and electronic instruments are tested 4.3 Electrical and electronic faults are diagnosed 4.4 Methods for fault diagnosis are identified 4.5 Housekeeping is carried out as per work place procedure
5. Apply concepts	5.1 Safe working practices are observed as per work place procedures

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of DC and AC components and circuits	5.2 DC and AC components are identified 5.3 DC and AC power sources are identified 5.4 DC and AC principles are applied 5.5 Housekeeping is carried as per work place procedure

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. SI unit may include but not limited to:	• Power – Watts (W) • Current – Amperes (A) • Resistance – Ohms(Ω) • Voltage – Volts (V) • Capacitance –Farads(F) • Charge- Coulombs
2. Electrical and electronic components may include but not limited to:	• Switches • Circuit breakers • Fuses • Sensors • Transducers • Transistors • Rectifiers • Diodes
3. Safety devices may include but not limited to:	• Fuses • Circuit breakers • Switch fuse

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:

- Use of basic electrical instruments
- Perform unit conversions of electrical quantities

- Performing electrical earthing
- Logical thinking
- Problem solving
- Using different measuring tools

Required knowledge

The individual needs to demonstrate knowledge of:

- Electrical and Electronic circuits
- SI units of various electrical and electronic parameters
- Earthing testing
- Types and purpose of measuring instruments
- Units of measurement and abbreviations
- Motor starting devices
- Power sources
- Electrical, electronic and drawing symbols

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 Observed safe working practices throughout the task accordingly 1.2 Identified basic SI units in electrical correctly 1.3 Named electrical and electronic components correctly 1.4 Identified power control safety devices correctly 1.5 Observed safe working practices throughout the task correctly 1.6 Named electrical, electronic and drawing symbols correctly 1.7 Named sensor circuits correctly 1.8 Named transducer circuits correctly 1.9 Used manufacturers manuals and catalogues accordingly 1.10 Tested electrical and electronic instruments correctly 1.11 Diagnosed electrical and electronic faults accordingly 1.12 Identified methods for fault diagnosis correctly 1.13 Identified D.C and A.C components correctly 1.14 Identified D.C and A.C power sources correctly 1.15 Applied D.C and A.C concepts accordingly 1.16 Performed housekeeping practices correctly
2. Resource	The following resources should be provided:

Implications	2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Measuring equipment and instruments 2.3 Materials relevant to the tasks
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Direct Observation 3.2 Demonstration with Oral Questioning 3.3 Written tests
4. Context of Assessment	Competency may be assessed individually in the actual workplace or through accredited institution or during industrial attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.