

| <b>ELEMENT</b><br>These describe the key outcomes which make up workplace function. | <b>PERFORMANCE CRITERIA</b><br>These are assessable statements which specify the required level of performance for each of the elements.<br><i>(Bold and italicised terms are elaborated in the Range)</i>                                                                                                                                                                                                                                                                                                                                                                             |
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| 3. Program automation system                                                        | 3.1 Application software and drivers are installed as per the original equipment manufacturer's specifications (OEMS).<br>3.2 Program is developed as per <b><i>programming language</i></b> .<br>3.3 Program is debugged as per work requirement.<br>3.4 Program is uploaded to the controller as per OEMS.<br>3.5 Control parameters are configured as per automation. system requirements/commissioning data.                                                                                                                                                                       |
| 4. Commission Automation System                                                     | 4.1 Unit test is conducted as per OEMS, IEE and KEBS standards.<br>4.2 Functional tests are conducted as per system requirements.<br>4.3 System integration tests are conducted as per system requirements and OEMS.<br>4.4 Documentation is maintained as per the system requirements.<br>4.5 End user training is conducted as per the system requirements.<br>4.6 Final inspection and validation is conducted as per design specifications, safety standards and regulatory requirements.<br>4.7 Automation system is handed over to the end user as per organization requirement. |
| 5. Monitor automation system                                                        | 5.1 Monitoring and diagnostic tools are developed as per system requirements.<br>5.2 Monitoring and diagnostic tools are integrated as per system requirements<br>5.3 Data is extracted based on user monitoring requirements.<br>5.4 Data is stored as per user monitoring requirements.<br>5.5 Data is analyzed based on system optimization to yield metrics.<br>5.6 System optimization is carried out as per yielded metrics                                                                                                                                                      |
| 6. Maintain automation system                                                       | 6.1 Monitoring and diagnostic tools are developed as per system requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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## 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.

| <b>Variable</b>                                                        | <b>Range</b>                                                                                                                                         |
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| 1. <b><i>Automation technology</i></b> may include but not limited to: | <ul style="list-style-type: none"> <li>• PLC</li> <li>• Microcontroller</li> </ul>                                                                   |
| 2. <b><i>Automation components</i></b> may include but not limited to: | <ul style="list-style-type: none"> <li>• Sensors</li> <li>• actuators</li> </ul>                                                                     |
| 3. <b><i>Electrical Tests</i></b> may include but not limited to:      | <ul style="list-style-type: none"> <li>• Continuity tests</li> <li>• Insulation resistance test</li> <li>• Polarity test</li> </ul>                  |
| 4. <b><i>Programming language</i></b> may include but not limited to:  | <ul style="list-style-type: none"> <li>• Ladder diagram</li> <li>• Instruction list</li> <li>• Functional block diagram</li> <li>• Python</li> </ul> |

## REQUIRED KNOWLEDGE AND UNDERSTANDING

The individual needs to demonstrate knowledge and understanding of:

- The manufacturer's warranty requirements relating to installation of automation systems related components.

- The legal requirements relating to commissioning activities for electrical installation systems and components.
- Legislation and workplace procedures relevant to:
  - Environment, health and safety;
  - Appropriate PPE (personal protective Equipment)
- County Government bylaws
  - EPRA (Energy & Petroleum Regulatory Authority)
  - NEMA
  - CA
- The importance of documenting automation system installation information
- The importance of working to agreed timelines
- How to prepare, interpret and use sources of technical information for scheduled automation system installation activities
- The importance of using the correct sources of technical information.
- The purpose of and how to use identification codes (e.g., colour codes).
- The operating specifications and tolerances for different types of installed systems
- The hazards associated with operating the system.
- Identification of users to be trained

## **FOUNDATION SKILLS**

The individual needs to demonstrate the following additional skills:

- Communications (verbal and written);
- Proficient in ICT;
- Time management;
- Analytical
- Faults troubleshooting
- Problem solving;
- Planning;
- Decision making;
- First aid;
- Report writing;

## **EVIDENCE GUIDE**

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

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| 1. Critical Aspects of Competency | <p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Developed system design plan as per work requirement.</li> <li>1.2 Carried out modelling, simulation and prototyping as per design.</li> <li>1.3 Installed conduits, trunks, enclosures and support systems as per layout diagram and IET regulations.</li> <li>1.4 Installed automation components as per IET regulations and manufacturer's manual.</li> <li>1.5 Performed cable lugging, glanding and termination as per acceptable standards.</li> <li>1.6 Developed program as per programming language.</li> <li>1.7 Uploaded program to the controller as per OEMS.</li> <li>1.8 Configured Control parameters as per automation system requirements/commissioning data.</li> <li>1.9 Conducted Functional tests as per system requirements.</li> <li>1.10 Handed over Automation system to the end user as per organization requirement.</li> <li>1.11 Maintained Documentation as per the system requirements.</li> <li>1.12 Integrated Monitoring and diagnostic tools as per system requirements.</li> <li>1.13 Prepared System maintenance check list as per tasks and manufacturer's manual.</li> <li>1.14 Diagnosed Faults as per service manual.</li> </ul> |
| 2. Resource Implications          | <p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>2.1 Appropriately simulated environment where assessment can take place.</li> <li>2.2 Access to relevant work environments.</li> <li>2.3 Resources relevant to the proposed activities or task.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3. Methods of Assessment          | <p>Competency may be assessed through:</p> <ul style="list-style-type: none"> <li>3.1 Practical</li> <li>3.2 Projects</li> <li>3.3 Third party report</li> <li>3.4 Portfolio of evidence</li> <li>3.5 Written tests</li> <li>3.6 Oral questioning</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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| 4. Context of Assessment               | Competency may be assessed in a work place or a simulated work place.                                        |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |