



National Competency Standards for

# Electrician



National Vocational and Technical Training Commission (NAVTTTC)  
Government of Pakistan

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This document has been produced with the technical assistance by the TVET Sector Support Programme, which is funded by the European Union, the Federal Republic of Germany and the Royal Norwegian Embassy. The Programme has been commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and is being implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in close collaboration with the National Vocational and Technical Training Commission (NAVTTTC) as well as provincial Technical Education and Vocational Training Authorities (TEVTAs) and private sector organizations.

# **National Competency Standards for Electrician**

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## INTRODUCTION

An electrician is a multidimensional tradesperson who specializes in electrical wiring of buildings, stationary machines, and related equipment. Electricians can be employed in the installation of new electrical equipment or the maintenance and repair of existing electrical infrastructure. In order to meet the demand for electricians, National Vocational and Technical Training Commission (NAVTTTC) in collaboration with TVET Sector Support Programme (TVET-SSP) has developed national vocational qualifications comprising of generic, functional and technical competency standards for an electrician occupation. To facilitate the process of developing national qualifications for electrician, a Qualification Development Committee (QDC) was established under NVQF Operational Manual-1.

Competency standards, which are benchmarks for the performance, cover both the domestic and commercial aspects of an electrician's job. While setting the standards for the performances, required skills, underpinning knowledge and attitudes expected of an electrician have been inculcated in these competency standards.

Sector Skills Council (SSC) for Construction and experts from related industries have thoroughly reviewed and validated the competency standards as proposed by the QDC in terms of their relevancy and currency to the requirement of the job. The validated competency standards will provide the basis for the development of curricula, assessment and instructional materials that will support competency based training and assessment activities.

## PURPOSE OF THE QUALIFICATION

The primary objective of these qualifications is to set high professional standards for electricians. The development and implementation of these national qualifications will subsequently improve the quality of professional training and assessment in Pakistan. The specific objectives of developing these qualifications are as under:

- Improve the overall quality of training delivery and setting national benchmarks for training of electricians in the country
- Provide flexible pathways and progressions to learners enabling them to acquire relevant and current skills set
- Provide basis for competency based assessment which is recognized and accepted by employers
- Establish a standardized and sustainable system of training for electricians in the country

## DATE OF VALIDATION

These national qualifications have been validated by the Qualifications Validation Committee (QVC) on 07.02.2018 and they will remain in currency until 06.02.2023.

## CODE OF QUALIFICATION

| Qualification Title   | Code      |
|---|-----------|
| National Vocational Certificate Level-2 in Electrical Technology (Domestic Electrician)                       | 0713E&E18 |
| National Vocational Certificate Level-3 in Electrical Technology (Industrial Electrician)                     | 0713E&E19 |
| National Vocational Certificate Level-4 in Electrical Technology (Instrumentation and Automation Electrician) | 0713E&E20 |

## ENTRY REQUIREMENTS

Minimum requirements for entry National Vocational Certificate Level-2 in Electrical Technology (Domestic Electrician) is Middle or Matric.

## QUALIFICATIONS DEVELOPMENT COMMITTEE

The Qualifications Development Committee consisted of following members:

| S.No. | Name & Designation                               | Organization  |
|-------|--|---|
| 1.    | Abdul Basit Malik<br>CEO                         | Business Track Solutions Pvt. Limited - Islamabad                   |
| 2.    | Engr. Muhammad Aamir<br>Dy. Manager Electrical   | Punjab Industrial Estates Development & Management Company - Lahore |
| 3.    | Engr. Muhammad Saim Dilawar<br>Manager Technical | Wise Engineering & Business Solutions – Lahore                      |
| 4.    | Engr. Zamir-ul-Hassan Gardezi<br>MEP Manager     | MIDJAC Construction Pvt. Limited - Islamabad                        |

## QUALIFICATIONS VALIDATION COMMITTEE

The Qualifications Validation Committee consisted of following members:

| S.No. | Name & Designation                            | Organization  |
|-------|---|---|
| 1.    | Mr. Muhammad Asghar<br>Deputy General Manager | Habib Rafiq Pvt. Ltd., Islamabad                                  |
| 2.    | Mr. Abubakar Abid Butt<br>Director            | AA Business Systems, Islamabad                                    |
| 3.    | Mr. Mehmood Ahmed Khan<br>MEP Engineer        | Project Development Department, Bahria Town Pvt. Ltd., Rawalpindi |
| 4.    | Mr. Zameer UI Hassan Gardezi<br>Manager MEP   | MIDJAC Construction Pvt. Ltd., Islamabad                          |
| 5.    | Mr. Muhammad Imran<br>Manager                 | Capital Engineering Pvt. Ltd., Islamabad                          |

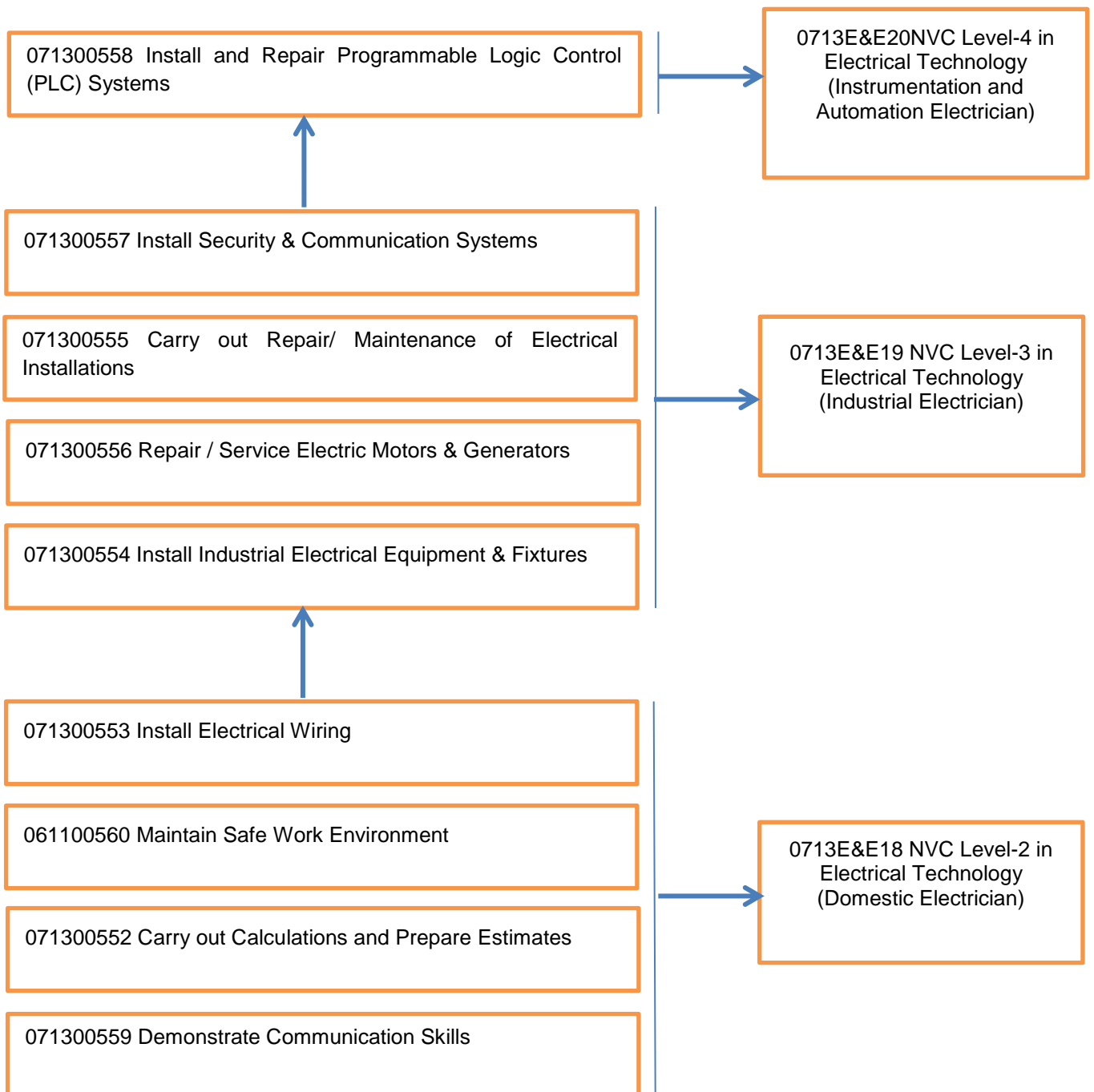
## REGULATIONS FOR THE QUALIFICATION AND SCHEDULE OF UNITS

Not Applicable

## SUMMARY OF COMPETENCY STANDARDS

| Code             | Competency Standards   | Level | Credits | Category   |
|------------------|--|-------|---------|------------|
| <b>071300559</b> | Demonstrate Communication Skills                                 | 2     | 3       | Generic    |
| <b>071300552</b> | Carry out Calculations and Prepare Estimates for Electrical Work | 2     | 4       | Functional |
| <b>061100560</b> | Maintain Safe Work Environment                                   | 2     | 3       | Generic    |
| <b>071300553</b> | Install Electrical Wiring  | 2     | 10      | Technical  |
| <b>071300554</b> | Install Industrial Electrical Equipment & Fixtures               | 3     | 15      | Technical  |
| <b>071300555</b> | Carry out Repair/ Maintenance of Electrical Installations        | 3     | 20      | Technical  |
| <b>071300556</b> | Repair / Service Electric Motors & Generators                    | 4     | 20      | Technical  |
| <b>071300557</b> | Install Security & Communication Systems                         | 2     | 6       | Technical  |
| <b>071300558</b> | Install and Repair Programmable Logic Control (PLC) Systems      | 4     | 20      | Technical  |
| <b>041600453</b> | Occupational health and safety                                   | 2     | 3       | Technical  |
| <b>041600455</b> | Communicate in the workplace to support customers and team       | 3     | 6       | Technical  |
| <b>041600459</b> | Work effectively in a customer service - sales environment       | 3     | 7       | Technical  |
| <b>041600460</b> | Develop professionalism  | 3     | 3       | Technical  |
| <b>041600461</b> | Comply with health and safety regulations                        | 3     | 2       | Technical  |





## 071300559 Demonstrate Communication Skills

### Overview

This Competency Standard identifies the competencies required to apply communication skills at workplace in accordance with the organization's guidelines and procedures. You are expected to work in a team to achieve common organizational goals and avoid conflicts. This competency standard would also enable you to use basic computer skills to communicate effectively and prepare work related documents and reports.

| <i>Competency Units</i>               | <i>Performance Criteria</i>  |
|---------------------------------------|--|
| <b>1. Work in Team</b>                | <p>P1. Treat team members with respect and maintain positive relationships to achieve common organizational goals</p> <p>P2. Listen to instructions carefully &amp; comply with those instructions</p> <p>P3. Provide work related information to team members and identify interrelated work activities to avoid confusion</p> <p>P4. Adopt communication skills appropriate to work activities and company procedures</p> <p>P5. Identify problems and resolve them through discussion and mutual agreement</p>    |
| <b>2. Deal with Clients</b>           | <p>P1. Collect and confirm work requirements from clients using appropriate communication procedures</p> <p>P2. Provide clear information to clients about work requirements including costs and time needed to accomplish the task</p> <p>P3. Negotiate with clients regarding wages, time, labour requirements etc.</p>  |
| <b>3. Demonstrate Basic IT Skills</b> | <p>P1. Create folders and files and learn major commands of operating system/windows</p> <p>P2. Type text and use major commands such as printing, editing, creating tables, header footer, footnotes, table of contents and page number etc.</p> <p>P3. Make the document as per work specifications and client's requirement</p> <p>P4. Generate reports for clients using appropriate computer applications</p> <p>P5. Use internet for sending/receiving emails and connecting through social or other media</p> |

## **Knowledge & Understanding**

The candidate must be able to demonstrate fundamental knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Principles of effective and interactive communication
- 7 C's of communication and their importance
- Cultural and organizational practices for effective communication
- Effective negotiation skills
- Role of team members and functionality of the teams
- Team dynamics and stages of team development
- Conflict resolution strategies
- Negotiation techniques
- Basic architecture of computer system
- Input / output devices of computer and their functions
- Basic computer skills using MS Word, MS Excel, use of internet, sending and receiving emails etc.
- Preparing relevant documents and reports

## **Critical Evidence(s) Required**

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Communicate effectively with colleagues and clients
- Develop a job completion report for the work using computer technology

# 071300552 Carry out Calculations and Prepare Estimates for Electrical Work

## Overview

This competency standard identifies the competencies required to prepare estimates in accordance with client's guidelines. You will be expected to estimate, ensuring cost effectiveness, conforming to standards and regulations. The underpinning knowledge regarding calculations and estimation will be sufficient to provide the basis for your work.

| <i>Competency Units</i>                   | <i>Performance Criteria</i>  |
|---|--|
| <b>1. Develop Basic Drawing</b>           | <ul style="list-style-type: none"> <li>P1. Take accurate measurements and collect information regarding work specifications</li> <li>P2. Develop drawing according to job requirement</li> <li>P3. Use relevant electrical symbols and signs as per standards</li> <li>P4. Confirm the job specifications and drawing from client or supervisor and make necessary adjustments, where required</li> <li>P5. Calculate electrical load based on the electrical installations provided in the specifications</li> </ul>  |
| <b>2. Perform Estimation of Materials</b> | <ul style="list-style-type: none"> <li>P1. Identify requirements of the material(s) to be utilized for the work in accordance with the job specifications and drawing</li> <li>P2. Check and confirm the requirement of the materials from the client or supervisor for accurate estimation. Quantify the material as per drawing</li> <li>P3. Use appropriate methods to calculate the of cost of material and accessories keeping in view the current market prices</li> <li>P4. Check and present the cost estimate to the client or supervisor for agreement</li> <li>P5. Make necessary adjustments in estimates, where required</li> </ul> |
| <b>3. Calculate Labour Cost</b>           | <ul style="list-style-type: none"> <li>P1. Calculate hours required for the task in accordance with the job requirements</li> <li>P2. Prepare labour cost for the task using appropriate procedures</li> </ul>   |

## **Knowledge & Understanding**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Basic electrical terminologies
- Electrical Circuit Characteristics
- Basic electric formulas & numeracy
- Norms in interacting & negotiating with customers/clients
- Interpretation of layout plans/wiring diagrams, service manuals and manufacturer's specifications, technical sketches, graphic symbols etc
- Types of electrical control and protective switchgear and accessories used in electrical circuits
- Types of electrical wires and cables and their ratings
- Types of electrical conduits, casing & capping etc.; their applications and their cutting/jointing/fixing methods
- Types of insulation material used in electrical installations
- Types of earth electrodes and their applications
- Local authority/enterprise policies related to electrical installations
- Electrical legislation and regulations related to electrical wiring
- Method of calculating labour cost/overheads/profit margin etc.
- Norms and standard formats of preparing estimates
- Record keeping and reporting

## **Critical Evidence(s) Required**

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Provide cost effective and quality oriented Bill of Quantity (BOQ)
- Make the rate analysis according to market prices
- Provide the estimate in accordance with the BOQ

## 061100560 Maintain Safe Work Environment

### Overview

This Competency Standard identifies the competencies required to apply occupational safety and health at workplace in accordance with the organization's approved guidelines and procedures. You will be expected to identify and use Personal Protective Equipment (PPE) according to the job requirement and potential hazards at workplace. The underpinning knowledge regarding OSH will be sufficient to provide the basis for your work.

| <i>Competency Units</i>                                | <i>Performance Criteria</i>  |
|--|--|
| <b>1. Identify Hazards at Workplace</b>                | P1. Read and interpret work processes and procedures correctly to identify risk of hazards at workplace<br>P2. Recognize engineering processes, tools, equipment and consumable materials that have the potential to cause harm<br>P3. Identify any potential hazards and take appropriate action to minimize the risk   |
| <b>2. Observe Occupational Safety and Health (OSH)</b> | P1. Work safely at all times, complying with health and safety precautions, regulations and other relevant guidelines<br>P2. Identify health and safety hazards in the workplace, so that the potential for personal injury, damage to equipment or the workplace is prevented, and corrective action is taken<br>P3. Deal with problems which are within your control, and report to the safety officer those problems that cannot be resolved<br>P4. Wear, adjust, and maintain personal protective equipment to ensure correct fit and optimum protection in compliance with company procedures<br>P5. Keep work area clean and clear of obstructions, and storing tools or equipment, so that the risk for accident or injury is prevented |

## **Knowledge & Understanding**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Types of hazards that are most likely to cause harm to health and safety
- Health and safety precautions
- Health and safety signs and symbols
- Techniques and methods to identify the risks of hazards at workplace
- Dealing with hazards to avoid any accident or injury
- Safety reporting procedures and documentation
- Use of Personal Protective Equipment
- First aid treatment methods including methods of resuscitation
- Fire-fighting methods
- Safe methods of handling heavy loads

## **Critical Evidence(s) Required**

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Identify possible hazards at workplace
- Use correct Personal Protective Equipment (PPE) for the assigned job

## 071300553 Install Electrical Wiring

### Overview

This Competency Standard identifies the competencies required to install electrical wiring at workplace in accordance with the drawing and client's requirement. You are expected to use electrical symbols, signs, government regulations, tools and equipment correctly while installing the electrical wiring in domestic as well as commercial settings. The underpinning knowledge regarding electrical wiring will be sufficient to provide the basis for your work.

| <i>Competency Units</i>                              | <i>Performance Criteria</i>   |
|--|---|
| <b>1. Prepare Materials for Wiring</b>               | P1. Select cables and wires required for each circuit considering current ratings, and conforming with standards and regulations<br>P2. Select PVC conduit, trunk and related accessories according to requirements<br>P3. Select electrical fittings, wiring accessories, switchgear, UPS, solar system, generator and other required materials as specified in the layout plan/wiring diagram   |
| <b>2. Install Conduit, Trunk and Wiring</b>          | P1. Mark locations of the electrical points, PVC conduit / trunk according to the wiring diagram<br>P2. Chisel walls as required for burying of conduit according to its size and number<br>P3. Select conduits and cut/bend/join them as necessary; fix in the walls; clamp firmly; ensure correct clearance from the wall surface according to sizes and number of wires to be accommodated<br>P4. Select PVC trunk and cut as necessary, fix firmly and neatly on the wall surfaces according to the wiring diagram and number of wires to be accommodated<br>P5. Select wires and cables according to the wiring diagram in accordance with current ratings, voltage drop and switch gear<br>P6. Lay wires / cables according to the circuit requirements ensuring safety of the wires / cables<br>P7. Install wiring for fixture and distribution boards according to wiring diagram |
| <b>3. Install Electrical Fixtures and Appliances</b> | P1. Fix electrical appliances and fixtures at standard height and stipulated location etc.<br>P2. Install UPS/solar panel/generator for backup power as per standard practices  |



P3. Terminate cables and flexible cords to appliances in accordance with the standard practice  
P4. Carry out testing of electrical fixtures and appliances to ensure proper functioning

#### **4. Perform Earthing for Wiring**

P1. Select earth electrode to suit the soil conditions and according to standard practices  
P2. Prepare Earth electrode and bury it into the ground at the identified location as per wiring diagram  
P3. Terminate Earth continuity wire/cable at the earth electrode by using specified connecting/fixing accessories  
P4. Test the Earth resistance in accordance with the standard practices  
P5. Construct and mark suitable earth electrode cover pit for identification

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## **Knowledge & Understanding**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Layout plans/wiring diagrams and manufacturer's specifications, and electrical symbols etc.
- Types of domestic wiring methods and circuits and their applications
- Types of electrical control and protective switchgear and accessories used in domestic wiring
- Types of electrical wires/ cables and their ratings
- Types of electrical accessories used in domestic installations
- Types of electrical conduits, casing & capping etc., and their applications and their cutting/jointing / fixing methods
- Type and application of UPS, Solar system and generators
- Electrical tools & measuring instruments used in domestic electrical installation work
- Methods of joining terminating electric wires / cables and types of insulation material used in domestic wiring
- Techniques for installation of Earthing electrodes
- Regulations for domestic electrical wiring under Electricity Act, 1937
- Regulations of Institute of Electrical and Electronics Engineers (IEEE) Standards Associations
- Testing procedures in electrical circuits
- Record keeping and reporting

## **Critical Evidence(s) Required**

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Install wiring of a room on a wiring board
- Install the conduit and trunks
- Install the appliances/ fixture
- Test Run the circuit

## 071300554 Install Industrial Electrical Equipment and Fixtures

### Overview

This Competency Standard identifies the competencies required to apply industrial wiring and installation skills at workplace in accordance with the organizations' / clients' guidelines. The underpinning knowledge regarding installation of equipment & fixtures will be sufficient to provide the basis for your work.

| <i>Competency Units</i>                              | <i>Performance Criteria</i>  |
|--|--|
| <b>1. Install Wiring (HT/LT)</b>                     | <ul style="list-style-type: none"> <li>P1. Interpret electrical drawing/layout plan for installation of HT/LT wiring</li> <li>P2. Select PVC/steel conduit, trunk, runways and related accessories according to requirements</li> <li>P3. Select cables and wires required for each circuit considering current ratings, and conforming with standards and regulations</li> <li>P4. Select electrical fittings, wiring accessories, switchgear and other required materials as specified in the layout plan/wiring diagram</li> <li>P5. Select and use the appropriate personal protective equipment (PPE) to avoid injury or accident at work place</li> </ul>  |
| <b>2. Install Conduit, Trunk, Runways and Wiring</b> | <ul style="list-style-type: none"> <li>P1. Mark locations of the electrical points, PVC/steel conduit / trunk according to the wiring diagram</li> <li>P2. Check and clean the conduit before wiring</li> <li>P3. Chisel walls as required for burying of conduit according to its size and numbers</li> <li>P4. Select conduits and cut/bend/join them as necessary; fix in the walls; clamp firmly; ensure correct clearance from the wall surface according to sizes and number of wires to be accommodated</li> <li>P5. Select PVC trunk and cut as necessary, fix firmly and neatly on the wall surfaces according to the wiring diagram and as per number of wires to be accommodated</li> <li>P6. Select wires and cables according to the wiring diagram in accordance with current ratings, voltage drop and switch gear</li> <li>P7. Lay wires / cables according to the circuit requirements ensuring safety of the wires / cables.</li> <li>P8. Install wiring for fixture and distribution boards according to wiring diagram</li> <li>P9. Erect electrical accessories and fittings at standard</li> </ul> |

heights and stipulated locations etc.

|  |  |
|--|--|
| <b>3. Install Fixtures, Equipment and Machinery</b>  | P1. Fix the electrical fixtures, equipment and machinery as per manufacturer's instructions<br>P2. Connect the fixtures, equipment and machinery with Earth point as per standard practice(s)<br>P3. Carry out Earth testing according to the power rating of the electrical fixtures, equipment and machinery<br>P4. Terminate the electrical fixtures, equipment and machinery with main power supply as per manufacturer's instructions<br>P5. Perform testing and commissioning of the electrical fixtures, equipment and machinery to ensure proper functioning |
| <b>4. Install Wiring for Stand-by Power Supplies</b> | P1. Install trunk /conduit/ducts etc. for laying of power cables according to wiring diagrams<br>P2. Install and connect Earth electrodes for the stand by power supply, as per manufacturer's instructions<br>P3. Install power changeover switchgear/ control and protective switchgear required for stand by power supply, and lay cables and terminate as per manufacturer's instructions<br>P4. Check power changing over system for correct phase sequence and performance   |

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## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Electrical layout plans/wiring diagrams
- Regulations for industrial electrical wiring under Electricity Act, 1937
- Regulations of Institute of Electrical and Electronics Engineers (IEEE) Standards Associations
- Use of personal protective equipment for High Transmission/Low Transmission systems
- Types of electrical control and protective switchgear and accessories used in industrial electrical circuits
- Types of electrical wires and cables, including underground cables, their ratings and its applications
- Types of electrical accessories used for industrial electrical installations and their applications

- Types of electrical conduits/ducts, casing & capping etc., and their cutting/joining /fixing methods
- Methods of cutting, drilling, filing and grinding etc.
- Types of electrical tools & measuring instruments used in industrial electrical installation work
- Types of insulation material used in electrical installations
- Types of earth electrodes and their applications in electrical installations
- Testing procedures in electrical circuits with proper instruments
- Record keeping and reporting

### **Critical Evidence(s) Required**

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- The candidate will install the following accessories in a simulated environment or in an industrial/commercial building to provide evidence of competency:
  - Lighting circuits
  - Ring & radial Circuits for socket outlets
  - Circuits for fixed electrical equipment/appliances
  - Circuits for high current rated electrical machinery
  - Circuits for industrial socket outlets and equipment
  - Circuits for special locations and hazardous areas
  - Circuits for stand by power supply

# 071300555 Carry out Repair/ Maintenance of Electrical Installations

## Overview

This Competency Standard identifies the competencies required to carry out repair and maintenance of electrical installations at workplace in accordance with the manufacturer's instructions and organizational requirements. The underpinning knowledge regarding carrying out repair and maintenance of electrical installations will be sufficient to provide the basis for your work.

| <i>Competency Units</i>                              | <i>Performance Criteria</i>  |
|--|--|
| <b>1. Identify Fault in Electrical Installations</b> | <p>P1. Inspect visually the electrical wiring, fixtures, equipment, appliances and machinery for discovering the faults and defects</p> <p>P2. Check the installation for consistency with the electrical drawing</p> <p>P3. Check the fault indication at relay for HT installation</p> <p>P4. Test electrical equipment as specified in the manufacturer's manual and record the results</p>   |
| <b>2. Perform Troubleshooting</b>                    | <p>P1. Prepare a list of items/material(s) required for repair /replacement as per specifications</p> <p>P2. Make necessary adjustments in the control and protective switchgear</p> <p>P3. Replace defective control &amp; protective switch gear, cables and accessories with standard items</p> <p>P4. Replace defective earth electrode &amp; faulty/damaged earthing conductors</p> <p>P5. Test installed electrical equipment for safe and optimum performance according to standards &amp; regulations</p> <p>P6. Record the results of the test performed on a standard format</p> |
| <b>3. Perform Preventive Maintenance</b>             | <p>P1. Carry out Preventive maintenance as specified by the manufacturers</p> <p>P2. Update Maintenance/service records as per requirement</p>   |

## **Knowledge & Understanding**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Interpretation of layout diagrams, technical sketches, graphic symbols and wiring diagrams, and manufacturer's specifications etc.
- Types of electrical tools used for troubleshooting and preventive maintenance purposes
- Types of electrical measuring instruments used in testing electrical installations
- Types of electrical wiring systems for domestic & industrial purposes
- Methods of tracing the fault
- Types of electrical control and protective switchgear and accessories used in electrical circuits
- Types and principles of operation of circuit breakers used in electrical installations and their applications
- Types of electrical wires and cables and their ratings
- Types of electrical accessories and their application on electrical installations
- Types of earthing systems used in domestic & industrial electrical installations
- Importance of testing electrical installations
- Importance of corrective & preventive maintenance

## **Critical Evidence(s) Required**

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- The candidate will perform the following activities in an industrial/commercial building to provide evidence of competency:
  - Trace out the fault and take corrective action
  - Carry out the preventive maintenance
  - Update the service/repair record

## 071300556 Repair / Service Electric Motors and Generators

### Overview

This Competency Standard identifies the competencies required to carry out repair and maintenance of motors and generators in accordance with the manufacturer's instructions. The underpinning knowledge regarding repair and maintenance of electrical motor & generators will be sufficient to provide the basis for your work.

| <i>Competency Units</i>                                       | <i>Performance Criteria</i>  |
|---|--|
| <p><b>1. Diagnose Fault in Electric Motor</b></p>             | <p>P1. Identify the type of electric motor from data / name plate or manual</p> <p>P2. Inspect visual mechanical defect such as, tight bearings, bent shaft, noisy running, temperature etc.</p> <p>P3. Check the motor by using specified test instruments to detect electrical defects such as loose/or burnt electrical connections, defective capacitors, burnt windings, low insulation resistance etc.</p> <p>P4. Check the tripping of protective device using specified test instruments, while the motor is running with power supply connected with suitable control and protective device, the difficulty in starting/ low RPM/ unusual noises/ excessive heat/ grounded winding etc.</p> |
| <p><b>2. Carry out Service/Repair Electric Motor</b></p>      | <p>P1. Dismantle the electric motor for internal tests/ servicing/repairs according to manufacturer's instructions</p> <p>P2. Clean the parts of the motor with specified cleaning agents/tools &amp; material</p> <p>P3. Check the windings insulation resistance with insulation tester</p> <p>P4. Repair the motor as per diagnosed fault</p> <p>P5. Check the insulation resistance of repaired motor as per standard</p> <p>P6. Carry out the No load and load tests as per standard practices</p>  |
| <p><b>3. Carry out Service/ Maintenance of Generators</b></p> | <p>P1. Carry out routine maintenance of the generator as specified in the manufacturer's manual</p> <p>P2. Update the maintenance/service records</p>  |



## **Knowledge & Understanding**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Type and Construction of Motors (Induction, Servo, Synchronous, DC motors etc.)
- Servicing of motors and standby generators
- Types of electrical measuring instruments used in testing electric motors & generators
- Fundamentals of electrical rotating machines
- Auto Transfer switch (ATS)/Auto Main Failure (AMF) module
- Maintenance procedures on standby generators
- Working principles of electric motors & generators
- Types of electrical control and protective devices
- Dis-assembling & re-assembling of electric motors
- Common faults found in electric motors/generators and troubleshooting methods
- Electrical legislation and regulations related to electric motors and allied motor control switchgear
- Preventive maintenance work on motors and stand by generators
- Record keeping and reporting

## **Critical Evidence(s) Required**

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- The candidate will repair / service the motor & generator to provide evidence of competency. The scope of work includes the following activities:
  - Perform insulation, frequency, no-load, load testing etc.
  - Troubleshooting of starting system of motor & generator
  - Replacement of capacitor and bearings of motor
  - Configure the ATS/AMF module

## 071300557 Install Security & Communication Systems

### Overview

This Competency Standard identifies the competencies required to install security & communication system in domestic and commercial buildings. The underpinning knowledge regarding the installation of Security & Communication System will be sufficient to provide the basis for your work.

| <i>Competency Units</i>   | <i>Performance Criteria</i>  |
|---|--|
| <b>1. Select the type of Safety / Security &amp; Communication System</b> | <p>P1. Inspect the premises for installation of safety / security and communication system as per requirement</p> <p>P2. Select the most appropriate safety / security/ communication system considering the practicality of the system, cost and client requirements</p>  |
| <b>2. Install Safety / Security &amp; Communication System</b>            | <p>P1. Select Tools, test instruments &amp; material as needed for the work</p> <p>P2. Select Conduits/ trunk, cables, wire &amp; switch gear and accessories according to the requirements</p> <p>P3. Mark the Location for safety / security and communication fixtures for installation, Conduits / casing and capping laid / fixed according to the wiring diagram avoiding possible electrical interferences on other systems</p> <p>P4. Lay the Wires / cables according to wiring diagram</p> <p>P5. Mount the safety / security and communication fixtures at the specified locations as per manufacturer's specifications and considering client's requirements</p> <p>P6. Install the stand by power back up system as per requirement</p> |
| <b>3. Test the Installed Security, Safety and Communications System</b>   | <p>P1. Connect the system to the power source as recommended by the manufacturer</p> <p>P2. Adjust Settings, directions where necessary for correct functioning of the system</p> <p>P3. Check the standby power backup for its proper functioning</p> <p>P4. Perform testing and commissioning of the system</p> <p>P5. Inform the client on the operating procedure and periodic testing of the system</p>   |

## **Knowledge & Understanding**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Circuit diagrams, service manuals, technical sketches, graphic symbols and wiring diagrams and manufacturer's specifications etc.
- Types of electrical tools and its applications
- Types of electronic test instruments used for testing safety/security and communication systems
- Types of communication and power wires and cables used for safety /security and communication systems and their ratings
- Types of security video cameras and sensing devices etc., used in safety/security and communication systems/devices
- Importance of testing industrial safety/security and communication systems/devices after completion, and regular periodical inspections thereafter.
- Telecommunications Industry Association (TIA) / Pakistan Telecommunication Authority (PTA) regulations
- Radio interference suppression techniques
- Record keeping and reporting

## **Critical Evidence(s) Required**

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- The candidate will install the following accessories in an industrial/commercial building to provide evidence of competency:
  - Safety /security and communication circuits
  - Ring & radial Circuits for socket outlets
  - Circuits for fixed Safety /security and communication equipment/fixture

# 071300558 Install and Repair Programmable Logic Control (PLC) Systems

## Overview

This Competency Standard identifies the competencies required to install, service & repair programmable logic control systems. The underpinning knowledge regarding the Install, Service & Repair Programmable Logic Control Systems will be sufficient to provide the basis for your work.

| <i>Competency Units</i>   | <i>Performance Criteria</i>  |
|---|--|
| <b>1. Install Programmable Logic Control System</b>                             | P1. Interpret manufacturer's instructional/service manual and machine functional diagram<br>P2. Install and connect the PLC system according to the functional diagram<br>P3. Ensure the PLC programme is correct and meets the requirement<br>P4. Check the machine performance as per requirement  |
| <b>2. Service and Repair Programmable Logic Control (PLC) Systems/ Machines</b> | P1. Interpret manufacturer's service manuals/software and machine / system tested<br>P2. Locate the fault in the PLC system as per manufacturers manual<br>P3. Repair/replace the faulty components of PLC system as per requirement   |
| <b>3. Service and Repair Input/ Output Devices</b>                              | P1. Interpret manufacturer's service manuals/software and machine / system tested, and the locations of faults identified<br>P2. Locate the faults in the input/output device according to manufacturer's manual<br>P3. Repair/replace the faulty components, as per requirements<br>P4. Carry out the functional tests on the control devices and final working as per manual |

## **Knowledge & Understanding**

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Interpretation of circuit diagrams, service manuals, technical sketches, graphic symbols, wiring diagrams and manufacturer's specifications etc.
- Fundamentals of Digital Electronics
- Fundamentals of ladder logic diagram
- Types of PLC system
- Types of PLC based machines and their applications
- Trouble shooting techniques in PLC based machines
- Cyber control system
- Motor control switchgear and its applications with PLC
- Common faults in industrial PLC based machines
- Documentation related to inspection and testing of PLC based control systems and machines
- Safety procedures
- Sensors and proximity switches

## **Critical Evidence(s) Required**

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- The candidate will install/repair the following accessories in an industrial/commercial building to provide evidence of competency:
  - Install and connect the PLC components according to the manual
  - Troubleshoot the faults in the PLC system and input/output devices according to manufacturer's manual
  - Carry out the functional tests on the control devices and final working as per manual

## Occupational health and safety

### Purpose

It is for the safety of persons working in that environment.

### Classification ISCED

0416 Wholesale and retail sales

### Available grade

Competent / Not yet competent

### Modification history

N/A

| Unit of Competency                                       | Performance Criteria   | Knowledge   |
|--|--|---|
| <b>I1. Identify and implement safe working practices</b> | You must be able to:<br>P1. Study of facility layout design and operations<br>P2. Implement the health and safety measures | You must know and understand:<br>K1. Knowledge of health and safety precautions |

## Communicate in the workplace to support customers and team

### Purpose

This Competency standard identifies the competencies required to communicate in the workplace to support customers and team as per organization's approved guidelines and procedures. You will be expected to communicate face-to-face with customers, use technology to communicate with customers, communicate with customers and colleagues from diverse backgrounds, work in a team, ask appropriate probing / questioning from customers and provide continuous feedback to customers / colleagues. Your underpinning knowledge about basic communication tools and correspondence tactics will be sufficient for you to provide the basics of the work.

### Classification ISCED

### Available grade

Competent / Not yet competent

### Modification history

N/A

| Unit of Competency                                  | Performance Criteria   | Knowledge   |
|---|--|---|
| <b>B1. Communicate face-to-face with customers.</b> | <b>You must be able to:</b><br>P1. Maintain welcoming customer environment that reflects company branding and market position and is in line with the company policy and procedures.<br>P2. Greet customer warmly according to company policy and procedures.<br>P3. Create effective service environment through verbal | <b>You must be able to:</b><br>K1. Explain different techniques that can be applied when communicate with customer face to face<br>K2. Describe types of customer behavior and dealings<br>K3. Explain different communication skills and techniques<br>K4. Explain the basic key elements of the |

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|  | <p>and non-verbal interaction according to company policy and procedures.</p> <p>P4. Use questioning and active listening to determine customer needs.</p> <p>P5. Use positive and inclusive language.</p> <p>P6. Recognize personal factors impact on customer service delivery</p> | <p>communication process.</p> <p>K5. Describe a range of communication methods that can be used to effectively communicate with customers and identify the most appropriate to use in different situations.</p> <p>K6. Explain how 'body language' impacts on the communication process.</p> |
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**B2. Use technology to communicate with customers.**

**You must be able to:**

- P1. Answer telephone according to the company procedures.
- P2. Questioning and active listening to identify caller and establish and confirm requirements.
- P3. Use telephone system functions according to instructions.
- P4. Use email, social networking sites and other technologies to receive and process information and customer requests in line with company policy and procedures.
- P5. Record and promptly pass on messages or information.
- P6. Inform customer of any problems and relevant action being taken.
- P7. Perform follow-up action as necessary.

**You must be able to:**

- K1. Identify the recognized principles of communicating electronically, by telephone and in writing.
- K2. Describe the different methods of collecting customer feedback on telephone.
- K3. Explain the importance of collecting customer feedback and how this can be used to improve customer service.
- K4. Describe how technology can affect and enhance the service delivery process.

**B3. Communicate with customers and colleagues from diverse backgrounds.**

**You must be able to:**

- P1. Treat customers and colleagues from diverse backgrounds with respect and sensitivity.
- P2. Consider cultural differences in verbal and non-verbal communication.
- P3. Use gestures or simple words to communicate where

**You must be able to:**

- K1. Identify the barriers to effective communication that can arise and how best to deal with these.
- K2. Identify and explain when it is necessary to seek advice or assistance from colleagues and when to take own initiative.



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|  | <p>language barriers exist.</p> <p>P4. Obtain assistance from colleagues or supervisors when required to facilitate communications.</p>   | <p>K3. Describe different types of dealings techniques with different types of behaviors</p>  |
| <p><b>B4. Work in a team.</b></p>                                      | <p><b>You must be able to:</b></p> <p>P1. Display a courteous and helpful manner at all times.</p> <p>P2. Complete allocated tasks willingly, according to set timeframes.</p> <p>P3. Actively seek or provide assistance by approaching other team members when difficulties arise.</p> <p>P4. Identify and use lines of communication with supervisors and peers according to company policy.</p> <p>P5. Encourage, acknowledge and act upon constructive feedback provided by other team members.</p> <p>P6. Use questioning to minimise misunderstandings.</p> <p>P7. Identify signs of potential workplace conflict wherever possible and take action to resolve the situation using open and respectful communication.</p> <p>P8. Participate in team problem solving.</p> <p>P9. Interpret organization's goals and objectives and translate them into individual targets</p> <p>P10. Prepare plan of action to achieve individual as well as team goals</p> | <p><b>You must be able to:</b></p> <p>K1. Define team work.</p> <p>K2. Explain the importance of team work.</p> <p>K3. Define company goals and objectives as well as SOPs of the company</p> <p>K4. Explain different concepts and techniques of problem solving</p> <p>K5. Describe systematic decision making process</p> <p>K6. Describe characteristics of a successful teamwork experience.</p> |
| <p><b>B5. Ask appropriate probing / questioning from customers</b></p> | <p><b>You must be able to:</b></p> <p>P1. Use different types of questions when appropriate.</p> <p>P2. Allow the other person to answer freely.</p> <p>P3. Collect facts, information and data about the other person's</p>  | <p><b>You must be able to:</b></p> <p>K1. Explain:</p> <ul style="list-style-type: none"> <li>• Open-ended questions</li> <li>• Close-ended questions</li> <li>• High gain questions</li> <li>• Mirror questions</li> <li>• Probing questions</li> </ul>  |

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|  | <p>situation.</p> <p>P4. Focus on the necessary information (information that links directly to product or service)</p>   | <ul style="list-style-type: none"> <li>• Situation questions</li> </ul>   |
| <p><b>B6. Provide continuous feed-back</b></p> | <p><b>You must be able to:</b></p> <p>P1. Give and receive feed-back with customers.</p> <p>P2. Apply appropriate body language and read customers body language.</p> <p>P3. Give and receive feed-back with internal departments.</p> <p>P4. Design a communication system / process and share information.</p> <p>P5. Gain commitment from others to work together in the interest of the customers.</p> <p>P6. Conduct meetings.</p> <p>P7. Utilize the feed-back to identify opportunities for product / service improvement.</p> | <p><b>You must be able to:</b></p> <p>K1. Explain how to use customer feed-back to improve your business</p> <p>K2. Define importance of body language.</p> <p>K3. Explain communication ethics.</p> <p>K4. Define organizational Jargon.</p> |

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## Work effectively in a customer service/ sales environment

### Purpose

This Competency standard identifies the competencies required Work Effectively in a Customer Service/Sales Environment as per Organization's approved guidelines and procedures. You will be expected to work within organizational requirements, support the work team, maintain personal presentation, develop effective work habits, portray ethical behaviour and acquire up to date product / service knowledge. Your underpinning knowledge about Work Effectively in a Customer Service/Sales Environment will be sufficient for you to provide the basics of the work.

### Classification ISCED

0416 Wholesale and retail sales

### Available grade

Competent / Not yet competent

### Modification history

N/A

| Unit of Competency                                  | Performance Criteria   | Knowledge  |
|---|--|--|
| <b>F1. Work within organizational requirements.</b> | <b>You must be able to:</b><br><br>P1. Identify and read organisation's requirements and responsibilities and seek advice from appropriate people where necessary.<br><br>P2. Interpret staff rosters and provide sufficient notice of unavailability for rostered hours | <b>You must be able to:</b><br><br>K1. Define industry awards and agreements that relate to personal job role and terms and conditions of employment.<br><br>K2. Differentiate between employer and employee responsibilities.<br><br>K3. Explain different relevant legislation and statutory requirements. |

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|  | <p>according to workplace policy and procedures.</p> <p>P3. Develop and use a current working knowledge and understanding of employee and employer rights and responsibilities.</p> <p>P4. Comply with relevant duty of care and legal responsibilities, and support organisational culture.</p> <p>P5. Identify roles and responsibilities of colleagues and immediate supervisors.</p> <p>P6. Identify standards and values considered to be detrimental to the organisation and communicate this through appropriate channels.</p> <p>P7. Identify, recognise and follow behaviour that contributes to a safe and sustainable work environment.</p> |  |
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**F2.Support the work team.**

**You must be able to:**

- P1. Display courteous and helpful behaviour at all times.
- P2. Take opportunities to enhance the level of assistance offered to colleagues and meet all reasonable requests for assistance within acceptable workplace timeframes.
- P3. Complete allocated tasks as required.
- P4. Seek assistance when difficulties arise.

**You must be able to:**

- K1. Explain the importance of team work
- K2. Define workplace relations
- K3. Explain workplace policies, plans and procedures, including:
  - Dealing with grievances
  - Discriminatory behavior
  - Equal opportunity issues.
  - Staff rosters and notification of shift
  - Availability or non-attendance
  - Providing customer

- P5. Use questioning techniques to clarify instructions or responsibilities.
- P6. Identify and display a non-discriminatory attitude in all contacts with customers and other staff members.

service to colleagues and customers.

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| <p><b>F3. Maintain personal presentation.</b></p> | <p><b>You must be able to:</b></p> <ul style="list-style-type: none"> <li>P1. Observe appropriate dress code and presentation as required by the workplace, job role and level of customer contact.</li> <li>P2. Follow personal hygiene procedures according to organisational policy and relevant legislation.</li> </ul>   | <p><b>You must be able to:</b></p> <ul style="list-style-type: none"> <li>K1. Explain hygiene and personal presentation</li> <li>K2. Explain the importance of workplace ethics</li> </ul>              |
| <p><b>F4. Develop effective work habits.</b></p>  | <p><b>You must be able to:</b></p> <ul style="list-style-type: none"> <li>P1. Interpret, confirm and act on workplace information, instructions and procedures relevant to the particular task.</li> <li>P2. Ask questions to seek and clarify workplace information.</li> <li>P3. Plan and organise daily work routine within the scope of the job role.</li> <li>P4. Prioritise and complete tasks according to required timeframes.</li> <li>P5. Identify work and personal priorities and achieve a balance between competing priorities</li> </ul> | <p><b>You must be able to:</b></p> <ul style="list-style-type: none"> <li>K1. Explain staff counseling and disciplinary procedures</li> <li>K2. Describe workplace organizational structure.</li> </ul> |
| <p><b>F5. Portray ethical behavior</b></p>        | <p><b>You must be able to:</b></p> <ul style="list-style-type: none"> <li>P1. Follow ethical code of conduct.</li> </ul>  | <p><b>You must be able to:</b></p> <ul style="list-style-type: none"> <li>K1. Explain the importance of ethical behavior.</li> </ul>  |

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|  | <p>P2. Understand your customer's code of ethics.</p> <p>P3. Declare conflict of interest.</p> <p>P4. Maintain confidentiality.</p> <p>P5. Honour your commitments (timeframe, deliverables etc.)</p> <p>P6. Use internet for business only on company time.</p>   | <p>K2. Explain the importance of commitment in sales and customer services.</p>  |
| <p><b>F6. Acquire up to date product / service knowledge</b></p> | <p><b>You must be able to:</b></p> <p>P1. Gather information about your product / services.</p> <p>P2. Identify the components of your product and services.</p> <p>P3. Recognize the essential selling features of your products and services.</p> <p>P4. Translate all essential features of your product and services.</p> <p>P5. Analyze product success.</p> <p>P6. Identify your market position.</p> <p>P7. Familiar with all product promotions, sales manuals and product literature.</p> <p>P8. Keep information of latest technology advances and seek ways to use these technologies in your work.</p> | <p><b>You must be able to:</b></p> <p>K1. Explain:</p> <ul style="list-style-type: none"> <li>• Price per product.</li> <li>• Profit per product / service.</li> <li>• Price flection</li> <li>• Product strengths</li> <li>• Product weaknesses.</li> <li>• Warranty / guarantee policies.</li> <li>• Packaging facilities and potential.</li> </ul> <p>K2. Explain how your product/service fits into your customers overall operations, business plan, sales success, operation cost etc.</p> |

## Develop professionalism

### Purpose

This Competency standard identifies the competencies required to Develop Professionalism as per Organization's approved guidelines and procedures. You will be expected to create a personal vision / mission, manage your attitude, practice self-discipline, manage time, manage your professional development, and participate in trainings and performance review. Your underpinning knowledge about Develop Professionalism will be sufficient for you to provide the basics of the work.

### Classification ISCED

0416 Wholesale and retail sales

### Available grade

Competent / Not yet competent

### Modification history

N/A

| Unit of Competency                            | Performance Criteria   | Knowledge   |
|---|--|---|
| <b>G1. Create a personal vision / mission</b> | <b>You must be able to:</b><br>P1. Clarify / prioritize self-values and consider the value of others.<br>P2. Clarify expectations of yourself and expectations others have of you.<br>P3. Identify what you need to do to be successful (personal standards, targets, goals, principals)<br>P4. Set specific short and long term goals.<br>P5. Translate the vision into | <b>You must be able to:</b><br>K1. Explain long and short term goals.<br>K2. Explain why personal vision and mission is important for success.<br>K3. Describe the advantages of personal vision and mission. |

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|                                     | <p>actionable steps.</p> <p>P6. Integrate the vision into daily practice.</p> <p>P7. Recount frequently with your vision and change accordingly.</p>   |   |
| <b>G2. Manage your attitude.</b>    | <p><b>You must be able to:</b></p> <p>P1. Challenge yourself, break old habits, and move out of your comfort zone.</p> <p>P2. Practice innovative techniques for out of the box creative thinking.</p> <p>P3. Seek out support and feedback from others on the team, in the organization / community etc.</p> <p>P4. Identify daily, weekly accomplishments.</p> <p>P5. Read inspirational material, audiotapes etc.</p> | <p><b>You must be able to:</b></p> <p>K1. Explain the importance of personal and professional motivation</p> <p>K2. Identify your positive attitude.</p> <p>K3. Explain the advantages of innovative ideas and techniques during job.</p> |
| <b>G3. Practice self-discipline</b> | <p><b>You must be able to:</b></p> <p>P1. Accountable for your performance.</p> <p>P2. Identify what you need to do to be successful.</p> <p>P3. Communicate your priorities to others.</p> <p>P4. Make and honour appointments with yourself and others.</p> <p>P5. Practice relaxation and energizing techniques.</p>  | <p><b>You must be able to:</b></p> <p>K1. Explain the importance of communication.</p> <p>K2. Explain the advantages of self-discipline.</p>  |
| <b>G4. Manage time</b>              | <p><b>You must be able to:</b></p> <p>P1. Isolate key success activities and prioritize them.</p> <p>P2. Breakdown large tasks down into manageable action steps (set time frame).</p> <p>P3. Create or adopt action plans and follow it.</p> <p>P4. Set aside appropriate blocks of time for goal-related activities.</p>   | <p><b>You must be able to:</b></p> <p>K1. Explain the importance of time management to achieve different tasks.</p>   |



P5. Make the best possible use of support people / recourses to accomplish tasks.

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| <p><b>G5.Manage your professional development</b></p>            | <p><b>You must be able to:</b></p> <p>P1. Take inventory of your personal interests, abilities, skills, knowledge etc.</p> <p>P2. Identify and prioritize the strengths and gaps.</p> <p>P3. Use available assessment tools.</p> <p>P4. Create a personal growth strategy / career path.</p> <p>P5. Set personal goals and timeframe for achieving them.</p> <p>P6. Learn from your mistakes.</p> | <p><b>You must be able to:</b></p> <p>K1. Explain the importance and need of professional development.</p>   |
| <p><b>G6.Participate in trainings and performance review</b></p> | <p><b>You must be able to:</b></p> <p>P1. Analyse, evaluate and improve performance, and report significant issues/problems to senior management</p> <p>P2. Demonstrate to-do attitude in profession</p> <p>P3. Demonstrate understanding of skills requirements</p> <p>P4. Use the competences acquired in trainings</p>   | <p><b>You must be able to:</b></p> <p>K1. Define concept about performance standards.</p> <p>K2. Explain policies, procedures and regulations regarding human resources of the organization.</p> <p>K3. Explain self-planning and management techniques</p> <p>K4. Define goals and strategies of self- development.</p> <p>K5. Explain relevant knowledge about training / job requirements</p> |

## Comply with health and safety regulations

### Purpose

This Competency standard identifies the competencies required to comply with health and Safety Regulations as per Organization's approved guidelines and procedures. You will be expected to interpret health and safety regulations, apply basic safety procedures and apply basic emergency procedures. Your underpinning knowledge about comply with health and safety regulations will be sufficient for you to provide the basics of the work.

### Classification ISCED

0416 Wholesale and retail sales

### Available grade

Competent / Not yet competent

### Modification history

N/A

| Unit of Competency   | Performance Criteria   | Knowledge  |
|--|--|--|
| <b>H1. Interpret health and safety regulations, standards and guidelines of an organization.</b> | <b>You must be able to:</b><br><br>P1. Identify, understand and apply health and safety regulations at workplace<br><br>P2. Assess risk of injury and equipment damages in common work situations and report to department concerned for timely response<br><br>P3. Participate in quality enhancement of products or services of the organization | <b>You must be able to:</b><br><br>K1. Explain concepts and principles of health, safety, quality and environment regulations.<br><br>K2. Define types of risk of injuring and equipment damages.<br><br>K3. Describe types of risk and injury at workplace.<br><br>K4. Explain the procedure of dealing with risk and injury situation. |

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|  | <p>P4. Comply with quality and safety standards effectively</p> <p>P5. Handle toxic and hazardous material and product with caution</p> <p>P6. Assess risk of injuries and accidents and report it to senior management for avoiding serious injuries</p>   | <p>K5. Explain health and safety policies and guidelines of the organization.</p> <p>K6. define characteristics and types of toxic and hazardous material or products offered by company and their impact on environment.</p> |
| <b>H2. Apply basic safety procedures.</b>    | <p><b>You must be able to:</b></p> <p>P1. Follow safety procedures to achieve a safe work environment, according to all relevant WHS legislation, including codes of practice relating to particular hazards in the industry or workplace.</p> <p>P2. Identify and report unsafe work practices , including faulty plant and equipment according to company policy and procedures</p> <p>P3. Manage dangerous goods and substances according to company policy and relevant legislation.</p> <p>P4. Identify potential manual handling risks and manage manual handling tasks according to company policy.</p> <p>P5. Report work-related incidents and accidents to designated personnel.</p> <p>P6. Participate in consultative processes and procedures for WHS.</p> | <p><b>You must be able to:</b></p> <p>K1. Explain appropriate use of personal protective clothing.</p> <p>K2. Explain the procedure to eliminating hazards.</p> <p>K3. Explain first aid procedures.</p>                      |
| <b>H3. Apply basic emergency procedures.</b> | <p><b>You must be able to:</b></p> <p>P1. Follow fire</p>   | <p><b>You must be able to:</b></p> <p>K1. Define fire, chemical and</p>   |

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|  | <p>and emergency procedures, including evacuation, according to company policy and legislation.</p> <p>P2. Identify designated personnel responsible for first aid and evacuation procedures.</p> <p>P3. .Accurately identifies safety alarms.</p> | <p>electrical hazards</p> <p>K2. Explain slip, trips and falls</p> <p>K3. Explain the procedure of storage of dangerous goods and hazardous substances and waste.</p> <p>K4. Define communication and consultation processes.</p> <p>K5. Explain manual handling procedures.</p> |
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## LIST OF TOOLS AND EQUIPMENT

| Sr. | Items  |
|-----|--|
| 1.  | AC & DC Motors                               |
| 2.  | Ammeter                                      |
| 3.  | Battery Charger                              |
| 4.  | Battery Cleaning Kit                         |
| 5.  | Bearing Puller                               |
| 6.  | Bench Vice                                   |
| 7.  | Cable / Wire Gauge                           |
| 8.  | Cable Cutter                                 |
| 9.  | Cable Knife                                  |
| 10. | Cells tester                                 |
| 11. | Chisel                                       |
| 12. | Circuit Boards                               |
| 13. | Clamp Meter                                  |
| 14. | Combination Plier Set                        |
| 15. | Disk Grinder                                 |
| 16. | Duct Rod                                     |
| 17. | Earth Tester                                 |
| 18. | Files (set)                                  |
| 19. | Filler gauge                                 |
| 20. | Flux   |
| 21. | Generator                                    |
| 22. | Gloves                                       |
| 23. | Grinder                                      |
| 24. | Hacksaw                                      |
| 25. | Hammer                                       |
| 26. | Handsaw                                      |
| 27. | Holesaw                                      |
| 28. | Hydrometer                                   |
| 29. | IR Temperature Gun                           |
| 30. | L Scale                                      |
| 31. | Lugs Punching Machine (Hydraulic and Manual) |
| 32. | Lux Meter                                    |
| 33. | Magnetic Conductor                           |
| 34. | Megger (Insulation Tester)                   |
| 35. | Micron Meter                                 |
| 36. | Mini Hydraulic Press Machine                 |
| 37. | Multimeter                                   |
| 38. | OTDR Meter                                   |
| 39. | Overall Combination                          |
| 40. | Phase Sequence Meter                         |
| 41. | Philips Screwdrivers Set                     |
| 42. | Ring Spanner Set                             |
| 43. | RPM Meter                                    |
| 44. | Safety Belt                                  |
| 45. | Safety Goggles                               |

|            |                                      |
|------------|--------------------------------------|
| <b>46.</b> | <b>Safety Helmet</b>                 |
| <b>47.</b> | <b>Safety Shoes</b>                  |
| <b>48.</b> | <b>Set of Nose Pliers</b>            |
| <b>49.</b> | <b>Set of Screw Drivers</b>          |
| <b>50.</b> | <b>Soldering Iron</b>                |
| <b>51.</b> | <b>Soldering Lead</b>                |
| <b>52.</b> | <b>Specific Gravity Chart</b>        |
| <b>53.</b> | <b>Splicing Machine</b>              |
| <b>54.</b> | <b>Spring tension checking meter</b> |
| <b>55.</b> | <b>Tachometer</b>                    |
| <b>56.</b> | <b>Test lamp</b>                     |
| <b>57.</b> | <b>Thermometer</b>                   |
| <b>58.</b> | <b>Thimble Press Plier</b>           |
| <b>59.</b> | <b>Torque Wrench</b>                 |
| <b>60.</b> | <b>Transformer</b>                   |
| <b>61.</b> | <b>Vernier Caliper</b>               |
| <b>62.</b> | <b>Voltmeter</b>                     |
| <b>63.</b> | <b>Wire Striper</b>                  |