

# National Vocational Certificate

## Level 1 in

### Electrical Equipment Installation and Repair

Competency Standards



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## Competency Standards: Electrical and Electronic Assembler (Helper) - Level 1

### Competency Standard A: Maintain safety, health and cleanliness

**Overview:** This competency standard is intended to maintain health, safety and cleanliness in a variety of contexts. People holding credit for this competency standard are able to: Identify risks in the workplace; follow cleanliness procedures to control risks; apply safe work procedures; and follow emergency procedures.

Competency Unit	Performance Criteria	Knowledge and Understanding
<b>A1:</b> Identify risks in the workplace	<b>P1-</b> Identify and report health and safety hazards, and hygiene risks <b>P2-</b> Take action to reduce risk	<b>K1-</b> Types of hazards and risks in different workplace context <b>K2-</b> Risk control and assessment
<b>A2:</b> Follow cleanliness procedures to control risks	<b>P1-</b> Apply workplace cleanliness procedures <b>P2-</b> Handle and store items and materials	<b>K1-</b> Personal and workplace hygiene <b>K2-</b> General handling and storing procedures
<b>A3:</b> Apply safe work procedures	<b>P1-</b> Identify, use and store personal protective equipment <b>P2-</b> Interpret safety signs and symbols	<b>K1-</b> Common personal protective equipment <b>K2-</b> Common safety signs and symbols
<b>A4:</b> Follow emergency procedures	<b>P1-</b> Identify and report to appropriate personnel <b>P2-</b> Carry out evacuation procedures	<b>K1-</b> Emergency and evacuation procedures <b>K2-</b> Types of fire

**Competency Standard B: Communicate in different work contexts**

**Overview:** This competency standard is intended to apply basic communication skills in a variety of work contexts. People holding credit for this competency standard are able to: Gather, convey, and receive information; apply routine face-to-face communication; apply visual communication; and complete relevant work related documents.

Competency Unit	Performance Criteria	Knowledge and Understanding
<b>B1:</b> <b>Gather, receive and convey information</b>	<b>P1-</b> Gather, receive and respond verbal and written actions <b>P2-</b> Clarify understanding by asking questions Convey instructions <b>P3-</b> Convey instructions	<b>K1-</b> Types of verbal and non-verbal messages <b>K2-</b> Purpose and function of communication devices <b>K3-</b> Question techniques
<b>B2:</b> <b>Apply routine face-to-face communication</b>	<b>P1-</b> Receive and follow routine instructions <b>P2-</b> Carry out procedures according to requirements <b>P3-</b> Access and interpret information from a range of sources <b>P4-</b> Complete verbal and/or written reporting	<b>K1-</b> Purpose of instructions <b>K2-</b> Purpose of set requirements <b>K3-</b> Different types of sources <b>K4-</b> Purpose of reporting; Types of reports
<b>B3:</b> <b>Apply visual communication</b>	<b>P1-</b> Obtain and acknowledge attention of communicating parties <b>P2-</b> Clarify and confirm the intention of visual communication	<b>K1-</b> Methods of official correspondence <b>K2-</b> Visual communication skills
<b>B4:</b> <b>Complete relevant work related documents</b>	<b>P1-</b> Complete range of forms <b>P2-</b> Complete job cards	<b>K1-</b> Examples of work forms and their purpose <b>K2-</b> Purpose of job cards

**Competency Standard C: Apply a problem solving method**

**Overview:** This competency standard is intended to apply a problem solving method in a variety of contexts. People holding credit for this competency standard are able to: Define a problem; choose a method for solving an identified problem; and apply the problem solving method.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>C1:</b> <b>Define a problem</b></p>	<p><b>P1-</b> Define problem in terms its nature, parties involved, and the effects it may have</p> <p><b>P2-</b> Describe the problem in terms of ownership, responsibility, its sphere of influence and authority</p>	<p><b>K1-</b> Problem solving methods:</p> <ul style="list-style-type: none"> <li>• Brainstorming</li> <li>• Pros and cons</li> <li>• IDEAL</li> <li>• Research</li> </ul>
<p><b>C2:</b> <b>Choose a method for solving an identified problem</b></p>	<p><b>P1-</b> Describe problem solving method in terms of processes to be undertaken</p> <p><b>P2-</b> Select and describe problem solving method in terms of its suitability</p>	<p><b>K1-</b> Problem solving methods:</p> <ul style="list-style-type: none"> <li>• Brainstorming</li> <li>• Pros and cons</li> <li>• IDEAL</li> <li>• Research</li> </ul>
<p><b>C3:</b> <b>Apply the problem solving method</b></p>	<p><b>P1-</b> Apply chosen method</p> <p><b>P2-</b> Describe the outcome of the problem</p> <p><b>P3-</b> Implement a conclusion to the problem</p>	<p><b>K1-</b> Problem solving methods:</p> <ul style="list-style-type: none"> <li>• Brainstorming</li> <li>• Pros and cons</li> <li>• IDEAL</li> <li>• Research</li> </ul>

**Competency Standard D: Apply basic reading, writing and speaking skills in English in different life contexts**

**Overview:** This competency standard is intended to assist people in applying basic reading, writing and speaking skills in English in different life contexts. People holding credit for this competency standard are able to: read texts used in different contexts; write texts for different contexts; and apply speaking and listening skills.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>D1:</b> <b>Read texts used in different contexts</b></p>	<p><b>P1-</b> Identify and interpret the purpose of text</p> <p><b>P2-</b> Identify and interpret main ideas and/or key procedures in the text</p> <p><b>P3-</b> Identify and interpret the meaning of key words and phrases in the text</p> <p><b>P4-</b> Express opinions on the text or on its subject matter in a clear and simple manner</p>	<p><b>K1-</b> Importance of written texts</p> <p><b>K2-</b> Importance of correct interpretation of texts</p> <p><b>K3-</b> Key words and key phrases</p> <p><b>K4-</b> Explanation of text in a variety of contexts</p>
<p><b>D2:</b> <b>Write texts for different contexts</b></p>	<p><b>P1-</b> Use clear and simple English on familiar subjects</p> <p><b>P2-</b> Apply planning, drafting and editing processes</p> <p><b>P3-</b> Apply correct and coherent sequence and structure of information and/or ideas</p> <p><b>P4-</b> Achieve reasonable comprehension of written text through correct spelling, punctuation, and use of grammar</p>	<p><b>K1-</b> Methods of simple English writing</p> <p><b>K2-</b> Planning, drafting, and editing processes</p> <p><b>K3-</b> Summarising and paraphrasing of informed action</p> <p><b>K4-</b> Principles of English grammar</p>
<p><b>D3:</b> <b>Apply speaking and listening skills</b></p>	<p><b>P1-</b> Identify and interpret key points</p> <p><b>P2-</b> Convey information in a clear and concise manner</p> <p><b>P3-</b> Use speaking and listening skills effectively</p>	<p><b>K1-</b> Speaking and listening skills</p> <p><b>K2-</b> Speaking and listening skills</p> <p><b>K3-</b> Speaking and listening skills</p>

**Competency Standard E: Apply basic numeracy skills in different life contexts**

**Overview:** This competency standard is intended to assist people in applying basic numeracy skills in different life contexts. People holding credit for this competency standard are able to: Apply knowledge and conventions of common shapes to represent real life objects; Measure materials or objects; perform basic calculations associated with money, and time; use and create tables and graphs to represent and interpret public information; and apply simple formulae to solve arithmetic problems in real life contexts.

Competency Unit	Performance Criteria	Knowledge and Understanding
<b>E1:</b> <b>Apply knowledge and conventions of common shapes to represent real life objects</b>	<b>P1-</b> Identify and name common two and three-dimensional shapes <b>P2-</b> Represent two and three-dimensional shapes and objects in diagrammatic form <b>P3-</b> Assemble simple three-dimensional objects	<b>K1-</b> Types and terminology of common shapes <b>K2-</b> Differentiation between two and three dimensional shapes / objects <b>K3-</b> Differentiation between two and three dimensional shapes / objects
<b>E2:</b> <b>Measure materials or objects</b>	<b>P1-</b> Identify and use measuring instruments <b>P2-</b> Apply simple formulae to calculate area and volume of regular shapes	<b>K1-</b> Types and purpose of measuring instruments <b>K2-</b> Units of measurement and abbreviations
<b>E3:</b> <b>Perform basic calculations associated with money, and time</b>	<b>P1-</b> Perform simple calculations involving time <b>P2-</b> Convert fractions, decimals, and percentages <b>P3-</b> Perform simple calculations involving money	<b>K1-</b> Rounding techniques <b>K2-</b> Types of fractions <b>K3-</b> Rounding techniques
<b>E4:</b> <b>Use and create tables and graphs to represent and interpret public information</b>	<b>P1-</b> Identify and interpret key features of everyday tables and graphs <b>P2-</b> Collect, sort and record data in a table <b>P3-</b> Construct and label simple graphs	<b>K1-</b> Different types of tables and graphs <b>K2-</b> Preparation of basic data, tables & graphs <b>K3-</b> Meaning of graphs, such as increasing, decreasing, and constant value
<b>E5:</b> <b>Apply simple formulae to solve arithmetic problems in real life contexts</b>	<b>P1-</b> Basic formula of power, current and voltage calculations. <b>P2-</b> Verify solutions to simple arithmetic problems	<b>K1-</b> Interpretation of simple formula & algebraic expression <b>K2-</b> Arithmetic problems and solutions



**Competency Standard F: Demonstrate positive workplace attitude and behaviours**

**Overview:** This competency standard is intended to assist people in developing a positive attitude and behaviour in a work environment. People holding credit for this competency standard are able to: Apply knowledge of positive workplace attitude and behaviours; interact with people in the context of a work environment; and assess own professional behaviour in a work environment setting.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>F1:</b> Apply knowledge of positive workplace attitude and behaviours</p>	<p><b>P1-</b> Describe proper dress code in a work environment <b>P2-</b> Demonstrate positive listening skills <b>P3-</b> Explain the concept of work ethic</p>	<p><b>K1-</b> Acceptable and unacceptable dress code <b>K2-</b> Positive listening strategies <b>K3-</b> Responsibility and accountability of the individual</p>
<p><b>F2:</b> Interact with people in the context of a work environment</p>	<p><b>P1-</b> Describe the importance of first impression <b>P2-</b> Demonstrate interaction with people in a work environment setting <b>P3-</b> Explain good customer service practice <b>P4-</b> Demonstrate ways of behaving professionally when provoked <b>P5-</b> Explain the importance of confidentiality</p>	<p><b>K1-</b> Grooming, Attire <b>K2-</b> Ways of greeting, introducing and interacting with people <b>K3-</b> Define customer service <b>K4-</b> Patience and tolerance <b>K5-</b> Confidentiality of:</p> <ul style="list-style-type: none"> <li>• Information</li> <li>• Material</li> <li>• Documents</li> </ul>
<p><b>F3:</b> Assess own professional behaviour in a work environment setting</p>	<p><b>P1-</b> Analyse personal behaviour in three different situations in a work environment <b>P2-</b> Measure personal behaviour against personal or company standards</p>	<p><b>K1-</b> Influencing factors in personal behaviour, e.g.</p> <ul style="list-style-type: none"> <li>• Anger</li> <li>• Stress</li> <li>• Depression</li> </ul> <p><b>K2-</b> General code of conduct</p>

**Competency Standard G: Carry out maintenance procedures as Electrical Equipment Installer & Repairer (Helper)**

**Overview:** This competency standard is intended to carry out maintenance procedures. People holding credit for this competency standard are able to: Demonstrate knowledge of preventive maintenance; carry out a preventive maintenance programme; and demonstrate safe working procedures.

Competency Unit	Performance Criteria	Knowledge and Understanding
<b>G1:</b> <b>Demonstrate knowledge of preventive maintenance</b>	<b>P1-</b> Define 'preventive maintenance' <b>P2-</b> Explain the importance of maintenance	<b>K1-</b> Preventive and corrective maintenance <b>K2-</b> Safety; Efficiency; Time- and cost saving
<b>G2:</b> <b>Carry out a preventive maintenance programme</b>	<b>P1-</b> Explain preventive maintenance programmes <b>P2-</b> Follow preventive maintenance programme	<b>K1-</b> Scheduled maintenance <b>K2-</b> Maintenance of: <ul style="list-style-type: none"> <li>• Tools</li> <li>• Equipment</li> <li>• Machinery</li> <li>• Facilities</li> </ul>
<b>G3:</b> <b>Demonstrate safe working procedures</b>	<b>P1-</b> Wear personal protective equipment <b>P2-</b> Adhere to documented maintenance procedures	<b>K1-</b> Types of personal protective equipment <b>K2-</b> Types of documents

**Competency Standard H: Produce a plan for career options related to an Electrical Equipment Installer & Repairer**

**Overview:** This competency standard is intended to assist people in planning for their career by developing an own plan for future directions. People holding credit for this competency standard are able to: Gather information for a personal profile; and produce a plan for achieving future directions.

Competency Unit	Performance Criteria	Knowledge and Understanding
<p><b>H1:</b> <b>Gather information for a personal profile</b></p>	<p><b>P1-</b> Gather information relevant to own future directions decision-making</p> <p><b>P2-</b> Identify options compatible with personal profile</p> <p><b>P3-</b> Investigate sources of current career information in terms of planning for future directions</p> <p><b>P4-</b> Select information sufficient and relevant to the identified options in terms of producing a plan for future directions</p> <p><b>P5-</b> Prioritise and justify options on the basis of gathered information</p>	<p><b>K1-</b> Analysis of own knowledge, skills, and abilities</p> <p><b>K2-</b> Description of personal profile and compatible options</p> <p><b>K3-</b> Methods of research work</p> <p><b>K4-</b> Recognition of best available options</p> <p><b>K5-</b> Methods of prioritising the options</p>
<p><b>H2:</b> <b>Produce a plan for achieving future direction</b></p>	<p><b>P1-</b> Produce a plan using identified information sources</p>	<p><b>K1-</b> Career guidance plan</p>

**Documents, policies, guidelines:**

- International Labour Organisation (ILO) Standards on Occupational Health and Safety
- Pakistan Electricity Act, 1910 and subsequent amendments
- Institute of Electrical and Electronics Engineers Standards Association (IEEE-SA)
- Industry code of practice

**Tools and Equipment:**

No.	Description	Quantity
1	Safety signage	Multiple
2	Personal protective equipment	15 sets
3	Hand tools (basic electrical toolbox)	15 sets
4	Measuring instruments (Rulers, watches/clocks, scales, thermometer, AVO meter, gravity meter)	5
5	Two- and three dimensional shapes / objects	Multiple
6	Text books	15
7	Reference books (Manufacturer's specification, Installation guides, Workplace documents)	5
8	Visual aids, demonstration models	Multiple

**Consumables:**

No.	Description	Quantity
1	Fire extinguisher	3
2	Fire blanket	3
3	Fire bucket	3
4	Computer	8
5	Printer	1
6	Scanner	1
7	Multimedia Projector	1
8	Flip chart with stand	3
9	Internet connection	1



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