

# NOCC-A21 Electrician: Competence Package

Relevant Occupation/trade title: Electrician				SAQA ID: 91761	
Learning Area 10: <b>Install, maintain and troubleshoot electrical transformers and associated controls</b>				Total Hours:	72
Learning Project 5: <b>Maintain and troubleshoot low voltage (three phase) and auto-transformers</b>				Total Hours:	8
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		<ul style="list-style-type: none"><li>• <b>Phase 1 completed</b></li><li>• <b>LA 8 LP 3</b></li><li>• <b>LA 10 LP 1-3</b></li></ul>			
Learning project description: <b>Apprentices understand how to maintain and troubleshoot low voltage (three phase) and auto-transformers.</b>					
Activity phase	Practical Skills Modules Content	Underpinning Knowledge Module Content	Work Experience Module Content	Didactical-methodologic al advice	Learning materials/Tools and Equipment
Reference to QCTO Curriculum	PM05-PS04	KM07-KT03	WM-None		
Planning/ Preparation	<p><b><u>Provide access to (Given):</u></b> Maintenance schedule and pre-wired three phase transformer installation, faulty three phase transformers and auto-transformers, electrical wiring diagram, materials and equipment as identified in last column;</p> <p><b><u>Apprentices must be able to do/perform the following (hard and soft) skills:</u></b></p> <ul style="list-style-type: none"><li>• Read and interpret the maintenance schedule</li><li>• Read and interpret electrical diagram</li><li>• Perform a risk assessment on the task</li><li>• Plan maintenance tasks</li><li>• Identify the tools and materials required</li><li>• Identify obstacles and necessary precautions in relation to task</li><li>• Plan sequence of tasks</li></ul>	<p><b><u>Knowledge of:</u></b></p> <ul style="list-style-type: none"><li>• Maintenance procedures on three phase transformers and auto-transformers</li><li>• Specific safety procedures related to maintenance of three phase transformers and auto-transformers</li><li>• Statutory requirements as per work conducted</li><li>• Common faults and their causes on three phase transformers and auto-transformers</li><li>• Basic troubleshooting techniques on three phase transformers and</li></ul>	<p><b><u>Under supervision:</u></b></p> <ul style="list-style-type: none"><li>• Maintain three phase transformers (in a variety of contexts) as per maintenance schedule</li><li>• Perform fault finding and basic trouble shooting of three phase transformers</li><li>• Replace faulty components on three phase transformers</li><li>• Test faulty three phase transformers and document identified faults</li></ul>	Lecture, presentations DVDs, audio-visual Demonstrations Practical applications and discussions	<p><b>Print materials, electronic files, software applications incl.:</b></p> <ul style="list-style-type: none"><li>• Training manuals for trainers and apprentices incl. multimedia software</li><li>• Set of presentation aids (videos, slides) for overhead or LED/LCD projectors</li><li>• Statutory requirements:</li><li>• SANS 10142-Part1</li><li>• Municipal by-laws</li><li>• Maintenance schedule</li></ul> <p><b>Tools, equipment and materials incl.:</b> Range of materials and tools to be covered (minimum):</p> <ul style="list-style-type: none"><li>• Vacuum cleaner</li><li>• Paintbrush</li><li>• Electrical hand tools standard toolbox</li><li>• Measuring instruments</li></ul>
Implementati	<b>Maintenance</b>				

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<b>on/ Execution Repair</b>	<ul style="list-style-type: none"> <li>• Transport tools safely to site</li> <li>• Perform maintenance tasks</li> <li>• Fit replacement spares where necessary</li> <li>• Test installation (power on)</li> </ul> <p><b>Faulty three phase transformers:</b></p> <ul style="list-style-type: none"> <li>• Informed discussion of possible causes of failure</li> <li>• Perform testing on faulty three phase transformers (power off)</li> <li>• Identify the fault based on testing</li> </ul>	auto-transformers			<p><b>Materials:</b></p> <ul style="list-style-type: none"> <li>• Pre-wired three phase transformer installation</li> <li>• Faulty three phase transformers and auto-transformers</li> <li>• <u>Replacement spares where applicable:</u> <ul style="list-style-type: none"> <li>• Lugs</li> <li>• Cable ties</li> <li>• Conductors</li> <li>• Cables</li> <li>• Slotted trunking</li> <li>• Metering instruments (voltmeter, ammeter)</li> <li>• Labelling</li> </ul> </li> </ul> <p><b>PPE:</b></p> <ul style="list-style-type: none"> <li>• Hard hat</li> <li>• Safety boots</li> <li>• Gloves</li> <li>• Safety glasses</li> </ul>
<b>Evaluation/ Documentation</b>	<ul style="list-style-type: none"> <li>• Document and report faults Clean work area after completion of task in accordance with work site procedures and housekeeping standards</li> <li>• Dispose of waste materials in accordance with safety standards and environmental requirements</li> <li>• Complete necessary documentation and submit to designated personnel.</li> </ul>				
<b>Total</b>	Hours: 8				
<b>Specialisation additions</b>					
<b>Assessment guidance</b>					
<ul style="list-style-type: none"> <li>• Self assessment</li> <li>• Group assessment</li> <li>• Theory test</li> </ul> <p><b>Criteria for assessment:</b></p> <ul style="list-style-type: none"> <li>• Planning for task</li> <li>• Interpretation of maintenance schedule and diagram</li> <li>• Identification of risks</li> <li>• Maintenance tasks performed as required</li> <li>• Transformer faults correctly identified and documented</li> <li>• Use of appropriate equipment and tools</li> <li>• Clean worksite after completion of task and equipment returned safely to store</li> </ul>					