

NOCC-A21 Electrician: Competence Package

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

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