



THE REPUBLIC OF UGANDA
Ministry of Education and Sports

Directorate of Industrial Training



**Assessment and Training
Package**

**For a
DOMESTIC ELECTRICIAN**

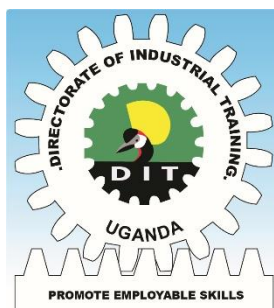
Qualification Level: 1

Occupational Cluster: Technology and Design

September 2020

Developed by:
Qualifications Standards Department
Directorate of Industrial Training

Funded by:
Government of Uganda



Assessment and Training Package

For a

DOMESTIC ELECTRICIAN

Qualification Level: 1

Occupational Cluster: Technology and Design

Directorate of Industrial Training
Plot 97/99 Jinja Road/ Corner 3rd Street,
P.O Box 20050, Lugogo, Kampala, Uganda
Tel: +256 414 253 704; +256 312 279 344
E-mail: uvqf.dit@gmail.com
[Web: www.dituganda.org](http://www.dituganda.org)

© Directorate of Industrial Training
2021

ISBN: 978-9913-626-71-2

ISO: 9001:2015 Certificate No.: UG92580A

All rights reserved. No reproduction or copy transmission of this publication may be made without written permission or in accordance with the provisions of the Copyright, Designs and Patents Act or under the terms of licence permitting limited copying issued by the licencing agency in Uganda. Any person who does any unauthorised act in relation to this publication may be liable to criminal prosecution and civil claims for damages.

Under BTVET Act, 2008, the functions of the Directorate of Industrial Training are:

- (a) To identify the needs of the labour market for occupational competencies that fall under the UVQF.
- (b) To regulate apprenticeship schemes.
- (c) To foster and promote entrepreneurial values and skills, as an integral part of the UVQF.
- (d) To secure adequate and sustainable financing for the efficient operations of the Directorate.
- (e) To accredit training institutions or companies as assessment centres.
- (f) To determine fees payable under the Act.
- (g) To develop, apply, expand and improve the purposeful application of Uganda vocational qualifications defined in the UVQF.
- (h) To assess and award Uganda Vocational Qualifications.
- (i) To promote on-the-job training in industry for apprenticeship, traineeship and indenture training and for other training such as further skills training and upgrading.
- (j) To prescribe the procedure for the making of training schemes.

Further to the above provisions, there is an established Uganda Vocational Qualifications Framework (UVQF), under part V of the BTVET Act, 2008. It is stated that:

The purpose of the UVQF is to;

- (a) Define occupational standards in the world of work.
- (b) Define assessment standards.
- (c) Award vocational qualifications of learners who meet the set standards of different studies.
- (d) Provide guidelines for modular training.

The UVQF shall follow principles of Competence Based Education and Training (CBET) which include:

- (a) Flexible training or learning modules.
- (b) Positive assessment and certification.
- (c) Assessment of prior learning.
- (d) Recognition of formal and non-formal training.
- (e) Self-paced or individual learning.
- (f) Work place learning.

For award and recognition of certificates, the BTVET Act, 2008 provides that:

- (1) The Directorate and other examination boards established under the Act shall award certificates and diplomas for Business, Technical or Vocational Education and Training under the UVQF.
- (2) The Certificates and Diplomas to be awarded shall be in the form prescribed by the Minister on the recommendation of the Industrial Training Council.
- (3) The Certificates and Diplomas awarded under the Act shall be recognised in the Uganda education system and by the labour market.

Under the TVET Implementation Standards 2020, the proposed new mandate of the Directorate of Industrial Training shall be restricted to promoting the highest standards in the quality and efficiency of industrial training in the country and ensuring an adequate supply of properly trained manpower at all levels in the industry and the world of work.

The functions shall include:

- (a) Regulating Industrial Training and Trainers.
- (b) Developing Industrial Training Curricula.
- (c) Harmonising Curricula and Certificates of competence.
- (d) Assessing Industrial Training.
- (e) Development of Occupational Standards and Assessment and Training Packages (ATPs) for Trade Testing for the industry and world of work.
- (f) Awarding certificates in that respect.

At operational level in the Directorate, the Qualification Standards Department performs development tasks related to concepts, procedures and instruments for establishment of the UVQF in close collaboration with both public and private stakeholders in vocational training.

In particular, the Department organises and coordinates the development of Assessment and Training Packages for use in competence-based vocational training as well as standards-based assessment and certification.

The Directorate has therefore produced this Assessment and Training Package for use in implementing Competence-Based Education and Training mechanisms.

TABLE OF CONTENTS

| | |
|--|------|
| Word from Permanent Secretary | iv |
| Executive Summary..... | vi |
| Acknowledgement..... | viii |
| Abbreviations and Acronyms | ix |
| Key definitions..... | x |
| 1.0 ATP-PART I | 1 |
| Occupational Profile for a Domestic Electrician..... | 1 |
| 2.0 ATP-PART II | 8 |
| Training Modules for a Domestic Electrician..... | 8 |
| 3.0 ATP-PART III | 24 |
| Assessment Instruments for a Domestic Electrician..... | 24 |
| Written Test Items (Samples) | 26 |
| Performance Test Items (Samples)..... | 33 |
| 4.0 ATP- PART IV | 36 |
| Information on Review Process..... | 36 |

Word from Permanent Secretary

The Kajubi Report (1989) and the Uganda Government White Paper on Education Review (1992) emphasised that the Uganda Secondary School Education should be vocationalised.

The World Bank Report on education in Uganda 2007 observed that although Uganda was experiencing steady economic growth on one hand, the secondary education curriculum was inadequately addressing the social and economic needs of the country on the other. The Report further noted that it is not the very top academic cadres that contribute most to the growth of the GDP but rather the competent middle level technicians that are flexible and technologically literate that the economy needs in the labour market at all levels.

Correspondingly, the NDP III 2020/21- 2024/5 highlights (i) low labour productivity (ii) high youth unemployment (38%) (iii) low transition rates from training to employment (35%) as some of the key challenges to Human Capital Development in Uganda.

In order to overcome these challenges, NDP III 2020/21- 2024/5, under objective 2 peaks the need to train the learners for the urgently needed skills and mainstream a dual education and training system. This paved way for the development of the lower secondary school vocational curriculum which supports both academic and vocational training.

The afore is in line with the Uganda Vision 2040. Under section 261, it emphasises that learners will be accorded opportunities to excel in the skills areas they are placed into. These will range from sports and cut to technical and vocational training. Hitherto, section 262 clearly states that the entire education system will be changed to emphasise practical skills, attitude and moral values.

Government of Uganda through the Ministry of Education and Sports rolled out the New Lower Secondary Curriculum in secondary schools countrywide during the first term of the academic year 2020. The overall goal of this curriculum is to produce graduates with employable skills and who are competitive in the labour market. It should be emphasised that vocational training will produce graduates who are employable. In the New curriculum, emphasis will be on equipping learners with employable skills and competencies. This will enable learners perform the requisite duties of the specified occupations. This is the reason why the lower secondary school vocational curriculum was tailored to the assessment requirements of the world of work.

Reading from the Curriculum Framework page 12, it is stated that the learners will be assessed by DIT. Upon assessment and certification, the graduates will be employable and competitive in the labour market. It's against this background that DIT, within its mandate vested in the BTVET Act, 2008 comes on board to take the lead in the development of the requisite Assessment and Training Packages (ATPs) for the various occupations that will be assessed under the Lower Secondary Curriculum.

The ATPs can be used by any training provider and/or those who wish to present themselves for Occupational Assessment and Certification.

Herewith, the Directorate of Industrial Training presents the Assessment and Training Package for training, assessment and certification of a **DOMESTIC ELECTRICIAN QUALIFICATION LEVEL 1**.

Finally, I thank all individuals, organisations and review partners who have contributed and/or participated in the review of this noble document.



Alex Kakooza
Permanent Secretary

Executive Summary

This Assessment and Training Package is a Competence-Based Education and Training (CBET) tool and consists of three major parts:

- 0.1 **PART I: The Occupational Profile (OP) of a DOMESTIC ELECTRICIAN.** This Occupational Profile which was reviewed by Domestic Electricians practicing in the world of work mirrors the duties and tasks that Domestic Electricians are expected to perform.
- 0.2 **PART II: Training Modules** in the form of guidelines to train Domestic Electricians both on the job as well as in training centres (or combinations of both venues of learning). The Training Modules herein have been reviewed basing on the Occupational Profile and hence are directly relevant for employment.
- 0.3 **PART III: Assessment Instruments** in the form of performance (Practical) and written (theory) test items that can and should be used to assess whether a person complies with the requirements of employment as a DOMESTIC ELECTRICIAN. These assessment instruments were reviewed jointly by job practitioners (Domestic Electricians) and instructors based on the occupational profile and training modules.
- 0.4 While the Occupational Profile (OP) contained in PART I of this document provides the information on **WHAT a person is expected to do** competently in the world of work, the test items, - including performance criteria- of PART III qualify the **HOW and/or HOW WELL a person must do the job.**
- 0.5 The modular format of the curriculum (PART II) allows learners to acquire job specific skills and knowledge (i.e. competencies) module by module. A single module can be accomplished within a relatively short duration allowing flexibility for learners to move directly into an entry level job, go for further modules or advance to higher levels of training. Modular courses allow more learners to access the training system because training centres as well as companies can accommodate more learners in a given period of time.
- 0.6 In addition to improved access, equity and relevance of BTVET, the UVQF will also enable people who are convinced to have acquired competencies laid down in this ATP through prior training and on-the-job experience to access assessment and certification directly; be it on the basis of a single module, a group of modules or all modules pertaining to the occupation at once. This achievement will facilitate Recognition of Prior Learning (RPL).

0.7 The parts of this Assessment and Training Package were sequentially reviewed as follows:

- i Part 1: Occupational Profile: **August 2020**
- ii Part 2: Training Modules: **August 2020**
- iii Part 3: Assessment Instruments (initial bank): **August 2020**

This ATP (or parts of it) may be periodically revised to match the dynamic trends in the occupation and hence issued in different versions.

DIT takes responsibility of any shortcomings that might be identified in this publication and welcomes suggestions for effectively addressing the inadequacies. The suggestion can be communicated to DIT through P.O. Box 20050, Kampala or through email uvaf.dit@gmail.com.



Patrick Byakatonda
Ag Director

Acknowledgement

The Qualifications Standards Department of DIT wishes to sincerely acknowledge the valuable contributions to the review of this Assessment and Training Package by the following persons, Institutions and organisations:

- Members of the DIT Industrial Training Council,
- The Director and staff of DIT,
- Ministry of Education and Sports,
- The practitioners from the world of work,
- Teachers of Technology and Design from various Secondary Schools,
- Technology and Design Curriculum Specialists from NCDC,
- Examination Specialists from UNEB,
- The facilitators involved in guiding the review panel in their activities,
- The Government of Uganda for financing the review of this ATP.

Abbreviations and Acronyms

| | |
|-------|--|
| A&C | Assessment and Certification |
| ADB | African Development Bank |
| ATP | Assessment and Training Packages |
| CBET | Competency Based Education and Training |
| DIT | Directorate of Industrial Training |
| ITA | Industrial Training Act |
| ITC | Industrial Training Council |
| LWA | Learning-Working Assignment |
| MC | Modular Curriculum |
| MoES | Ministry of Education and Sports |
| OP | Occupational Profile |
| PEVOT | Promotion of Employment Oriented Vocational and Technical Training |
| PEX | Practical Exercise |
| PTI | Performance (Practical) Test Item |
| RPL | Recognition of Prior Learning |
| TIB | Test Item Bank |
| TVET | Technical, Vocational Education and Training |
| UVQ | Uganda Vocational Qualification |
| UVQF | Uganda Vocational Qualifications Framework |
| WTI | Written (Theory) Test Item |
| ERA | Electricity Regulatory Authority |
| URA | Uganda Revenue Authority |
| NGO | Non-Government Organization |

Key definitions

| | |
|--|---|
| Assessment | Assessment is the means by which evidence is gathered and judged to decide if an individual has met the stipulated assessment standards or not. Testing is a form of formal assessment. |
| Competence | Integration of skills, knowledge, attitudes, attributes and expertise in doing /performing tasks in the world of work to a set standard. |
| Competency | (Occupational) competence is understood as the ability to perform tasks common to an occupation at an acceptable level. |
| CBET | Competence-based education and training means that programmes: <ol style="list-style-type: none">1. have content directly related to work2. focus is on 'doing something well'3. assessment is based upon industry work standards, and4. curricula are developed in modular form |
| Duty | A Duty describes a large area of work in performance terms. A duty serves as a title for a cluster of related Tasks (see also: TASK). |
| Learning-Working Assignment (LWA) | LWA are simulated or real job situations / assignments that are suitable for learning in a training environment (e.g. "small projects"). In a working environment LWA are real work situations/assignments. |
| Module | Modules are part(s) of a whole curriculum. Modules can be considered as "self-contained" partial qualifications which are described by learning outcomes or competencies and which can be assessed and certified individually. |
| Occupational Profile (OP) | <p>An Occupational Profile is an overview of the duties and tasks a job incumbent is expected to perform competently in employment.</p> <p>Occupational Profiles developed by practitioners from the world of work enhance the relevance of training and learning to the requirements of the world of work.</p> |

Occupational Profiles which define what a person is supposed to do which become the reference points for developing assessment standards and modular curricula.

Qualification A qualification is a formal reward for demonstrating competence, based on formal assessment against set standards and provided to the individual in the form of a certificate specifying the nature of the competence.

Task Job tasks represent the smallest unit of job activities with a meaningful outcome. Tasks result in a product, service, or decision. They represent an assignable unit of work and have a definite beginning and ending point. Tasks can be observed and measured. (*Also see: Duty*)

1.0 ATP-PART I

Occupational Profile for a DOMESTIC ELECTRICIAN

- 1.1 The OCCUPATIONAL PROFILE (OP) for “DOMESTIC ELECTRICIAN” below defines the **Duties** and **Tasks** a competent Domestic Electrician is expected to perform in the world of work (on the job) in Uganda and the East African region today.
- 1.2 Since it reflects the skill requirements of work life, the Occupational Profile is the reference document for the subsequent development of training modules and assessment instruments (test items) which are directly relevant to employment in Ugandan and the East African businesses and industries.
- 1.3 To ensure that the Occupational Profile is relevant for employment in Uganda and East Africa, the DIT used the method of “occupational/job profiling.

This approach involves the brainstorming of a panel of 8 to 12 competent job practitioners guided by trained and experienced facilitators. During a two-day workshop the panelists defined the duties and tasks performed in employment, as well as the prerequisite skills, knowledge, attitudes, tools and equipment, and the future trends and concerns in the occupation/job.

- 1.4 The panelists, facilitators and coordinators who participated in developing this Occupational Profile are listed on the following page.

¹ The DACUM-method was used. DACUM is an acronym for ‘Develop A Curriculum’

Expert Panel

Kiyingi Mathias

Ntinda VTI

Mukasa Ssonko John

Nice House of Plastics

Shakillah Lwanga

Nakawa VTI

Odama Ericson

Electric- Fix

Kavubu John Bosco

Mt. St Mary's Namagunga

Mujurizi Vincent

Ntare School

Wakabi Yusuf

KMS Global Electrical Relief

Waggumba Kameth

KMS Global Electrical Relief

Janja Bernard

NCDC

Tushabe Rossette

Lugogo VTI

Facilitators

Komugisha Noeline

Directorate of Industrial
Training

Co-ordinator

Mukyala E Ruth

Directorate of Industrial
Training

Funded by

Government of Uganda



THE REPUBLIC OF UGANDA
Ministry of Education and Sports

**Business, Technical and Vocational
Education and Training (BTJET)**
Sub sector Reform

Occupational Profile

For a

"Domestic Electrician"

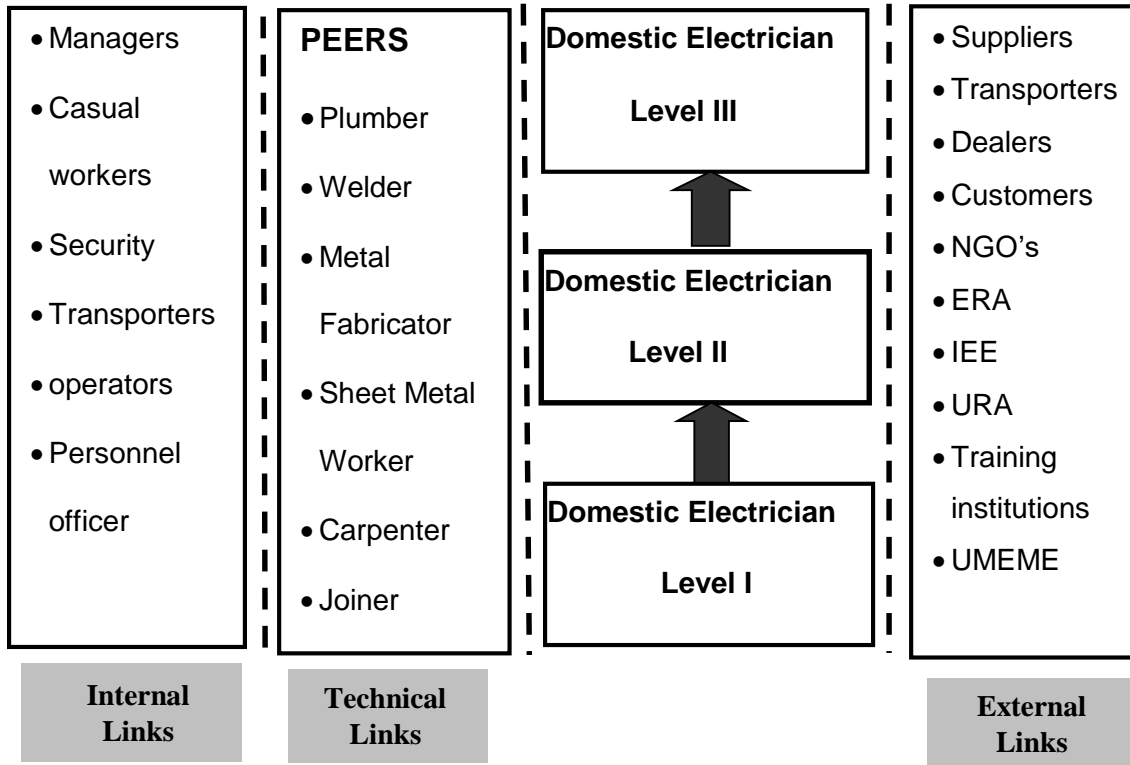
**Reviewed by: Qualifications Standards
Department of industrial training**

Dates of workshop: 07 -11th September 2020

NOMENCLATURE OF THE DOMESTIC ELECTRICIAN OCCUPATION

Definition: A Domestic Electrician is a person who does domestic electrical installation, maintenance of appliances and electric installations for voltages not exceeding 240 volts.

JOB ORGANISATION CHART FOR A DOMESTIC ELECTRICIAN



Definitions

A Level I Domestic electrician:

is a person who installs power and lighting systems in two bedroomed houses, draws and interprets circuit diagrams and carries out maintenance on the systems and home/domestic appliances

A level II Domestic electrician:

is a person who carries out installation of multiple switch systems, final circuits e.g. heaters, cookers etc. and does the drawing and interpretation of circuit diagrams for the above systems.

A Level III Domestic electrician:

is a person who handles installation and maintenance of domestic equipment and systems e.g. multiple earthing, lightning arrestors, water pumps etc. in storied buildings.

Duties and Tasks

| | | | |
|---|--|---|--|
| A. PLAN DOMESTIC ELECTRICAL WORKS | A1 Survey installation site | A2 Identify materials, tools and equipment | A3 Prepare work schedules |
| | A4 Sketch electrical diagrams | A5 Interpret electrical drawings | A6 Prepare bills of quantities |
| | A7 Develop maintenance schedules | | |
| B. PERFORM OCCUPATIONAL SAFETY, HEALTH AND ENVIRONMENTAL PROTECTION PRACTICES (OSHEPP) | B1 Apply safety rules and regulations | B2 Train subordinates and clients | B3 Wear protective gear |
| | B4 Display safety signs | B5 Demarcate work area | B6 Administer first aid |
| | B7 Carry out house keeping | | |
| C. PERFORM DOMESTIC ELECTRICAL INSTALLATION OF SINGLE PHASE | C1 Carryout conduit work | C2 Draw in electrical cables | C3 label electrical cores |
| | C4 Terminate conductors | C5 Fix electrical accessories | C6 Perform earthing |
| | C7 Install domestic appliances | C8 Test electrical installations | C9 Install lightening arrestors |
| | C10 Install domestic water pumps | C11 Store tools, materials and equipment | C12 Set SOPs |
| D. PERFORM PREVENTIVE MAINTENANCE OF DOMESTIC ELECTRICAL APPLIANCES AND INSTALLATIONS OF 240V ac AND BELOW | D1 Make consultations | D2 Clean electrical appliances | D3 Lubricate moving parts |
| | D4 Replace worn out electrical parts | D5 Insulate bare conductors | D6 Tighten loose electrical connections |

| | | | |
|--|---|--------------------------------------|---|
| E. PERFORM CORRECTIVE MAINTENANCE OF DOMESTIC ELECTRICAL APPLIANCES AND INSTALLATIONS OF 240Vac AND BELOW | E1 Check faults for electrical appliances | E2 Trouble shoot faults | E3 Replace faulty electrical parts |
| | E4 Modify electrical parts | E5 Join electrical conductors | E6 Test for functionality |
| | E7 Train user on systems and appliance use | | |

| | | | |
|------------------------------------|--------------------------------------|--|---|
| F. PERFORM MANAGEMENT TASKS | F1 Recruit workers | F2 Participate in meetings | F3 Keep electrical works records |
| | F4 Supervise works | F5 Appraise workers | F6 Remunerate workers |
| | F7 Market electrical services | F8 Carryout research on electrical related issues | F9 Sensitise workers on health matters e.g. HIV/ AIDS Covid-19 awareness |

Additional Information

| | |
|---|--|
| <p>Generic Knowledge & Skills</p> <ol style="list-style-type: none"> 1. Plastering skills 2. Chiselling skills 3. Mounting skills 4. Cable stripping skills 5. Joint making skills 6. Communication skills 7. Cable clipping skills 8. Drilling skills 9. Bending skills 10. Cutting skills 11. Entrepreneurship skills 12. Soldering skills 13. First aid skills | <ol style="list-style-type: none"> 14. Management skills 15. Rewinding skills 16. Computer skills 17. IEE Regulations and rules 18. Supply authority's regulations 19. Elementary mathematics 20. Basic engineering drawings 21. Use of measuring tools 22. Principles of electrical engineering science 23. Computer knowledge 24. HIV/AIDs prevention measures 25. COVID-19 SOP & Knowledge 26. Geometrical drawings organisational |
|---|--|

| | |
|--|--|
| <p>Tools, Materials and Equipment</p> <ol style="list-style-type: none"> 1. Tape measure 2. Screw drivers 3. Hammers 4. Draw tape 5. Pairs of pliers 6. Clipping tools 7. A set of drawing instruments 8. Chisel 9. Soldering iron 10. File 11. Cable stripper 12. Hacksaw 13. Knife 14. Hoe 15. Spirit level 16. Computer Takle meter 17. Posters/ Bill boards 18. Cables 19. Plain paper 20. Connectors 21. Charcoal and salt 22. PVC insulating tape | <ol style="list-style-type: none"> 38. Safety shoes 39. Couplers projectors 40. Notebooks 41. Tool boxes 42. Trolley 43. Ladders 44. Helmet 45. Overalls 46. Safety boots 47. Gloves 48. Masks 49. Bending machine 50. Air blower 51. Drilling machine 52. Drawing board 53. Multi meter 54. Tester phone 55. Megger tester 56. Blower machine 57. Greasing/ oil gun 58. Compressor 59. Angle grinder 60. Winding machine |
|--|--|

| | |
|---|--|
| <ul style="list-style-type: none"> 23. Accessories 24. Soldering wire 25. PVC metal conduits 26. PVC metal trucking 27. Trays (cable) 28. Stickers 29. Brooms 30. Buckets 31. Water 32. Timber 33. Safety belts 34. Soap detergent 35. Cotton wool 36. Paint 37. Security tape | <ul style="list-style-type: none"> 61. Chalk 62. Glue 63. Cable lugs 64. Marker (cable) 65. Hand outs 66. Soft board 67. Angle line bars 68. Screws and nuts 69. Circular 70. Boxes 71. Saddles 72. Junction boxes 73. Joint boxes 74. Earth resistance tester |
|---|--|

| | |
|--|--|
| <p>Attitudes / Traits / Behaviour</p> <ul style="list-style-type: none"> 1. Trustworthy 2. Careful 3. Creative 4. Confident 5. Intelligent 6. Obedient 7. Self-motivated 8. Attentive 9. Hardworking 10. Orderly 11. Analytical 12. Team player 13. Attitudes 14. Time management 15. Generic skills | <p>Trends and Concerns</p> <ul style="list-style-type: none"> 1. Employment challenges 2. Requires substantial start-up capital 3. Challenges with modern technology 4. Insufficient payment 5. Substandard tools, equipment and materials 6. Health hazards 7. No insurance cover for staff 8. Limited access to upgrading 9. Limited workplaces offering opportunities for hands-on practice 10. Prepaid electrical tariff system 11. Codeless power discharge |
|--|--|

2.0 ATP-PART II

Training Modules for a DOMESTIC ELECTRICIAN

- 2.1 A curriculum is a “guide / plan for teaching and learning” which provides a guide to teachers, instructors and learners. In the envisaged system of competence-based or outcome-oriented education and training (CBET), Curricula are no longer the benchmark against which assessment is conducted. It is rather the Occupational Profile and the related Test Items that provide the benchmark for assessment as well as for Curriculum development.
- 2.2 Occupation to acquire job specific skills and knowledge (i.e. competencies) module by module. A single module can be accomplished within a relatively short duration of time allowing learners to move directly into an entry level job, do further modules and advance to higher levels of training. Modular courses allow more learners to access the training system because training centres as well as companies can accommodate more students in a given period of time.
- 2.3 The modules were developed jointly by both instructors from training centres and job practitioners. They were developed using the Occupational Profile as a reference point and taking into account the specifications of training and learning outcomes in the form of Test Items described in Part II.
- 2.4 The modules contain “Learning-Working Assignments” (LWAs) and related “Practical Exercises” (PEXs) as key elements.
- LWAs are simulated or real job situations / assignments that are suitable for learning in a training environment (e.g. “small projects”). In a working environment, LWAs are real work situations.
- PEXs are therefore sub-sets of a LWA.
- 2.5 In principle, and following the philosophy of Competence-Based Education and Training (CBET), the modules can be used as a guide for learning in a training centre or at the work place; or combinations of both.

WHO IS A DOMESTIC ELECTRICIAN QUALIFICATION LEVEL 1?

A Domestic Electrician Level 1 handles the basic domestic electrical installations working on electricity voltages that are 240 Volts and below.

This person must be able to produce basic electrical sketches and drawings for one-way switching systems. He/she should also be able to perform up to two circuit domestic electrical installations including lighting and socket systems. In addition, a Domestic Electrician Qualification Level 1 must be able to carry out maintenance and repair of basic domestic installations as well as electrical no electronic control appliances.

TRAINING MODULES FOR A DOMESTIC ELECTRICIAN

| Code | Module Title | Average duration | |
|----------------|--|------------------|-----------------|
| | | Contact hours | Weeks |
| UE/DE/M1.1 | Draw Domestic Electrical Drawing and Sketches | 120 | 3 |
| UE/DE/M1.2 | Perform Domestic Electrical Installation | 160 | 4 |
| UE/DE/M1.3 | Maintain Domestic Installations Appliances and Equipment | 80 | 2 |
| UE/DE/M1.4 | Start and Manage an Electrical Enterprises | 160 | 4 |
| Summary | 4 training modules | 520 hours | 13 weeks |

Note: Average duration is contact time but NOT calendar duration

It is assumed that:

- 1 day is equivalent to 8 hours of nominal learning and
- 1 month is equivalent to 160 hours of nominal learning.

Information given on the average duration of training should be understood as a guideline. Quick learners may need less time than indicated or vice versa.

At completion of a module, the learner should be able to satisfactorily perform the included Learning Working Assignments, their Practical Exercises and attached theoretical instruction, as the minimum exposure.

Prior to summative assessment by recognized Agencies, the users of these Module Guides are encouraged to carefully consider continuous assessment using samples of (or similar) performance (practical) and written test items available in part III of this ATP.

| | |
|--|--|
| Code | UE/DE/M1.1 |
| Module title | M1.1: Draw Domestic Electrical Drawings and Sketches |
| Related Qualification | <u>Part of:</u> Proposed Uganda Vocational Qualification 1 (Domestic Electrician UVQ 1) |
| Qualification Level | 1 |
| Module purpose | The trainee shall be able to draw electrical symbols, interpret electrical drawings and produce sketches of a one way switching and power systems up to two circuits domestic installations |
| Learning-Working Assignments (LWAs) | <p>LWA 1/1: Design Electrical Diagrams LWA 1/2: Interpret Electrical Diagrams and Sketches LWA 1/3: Perform Measurements and Unit Conversions LWA 1/4: Perform Occupational Safety, Health and Environmental Protection Practices</p> <p><u>Note:</u></p> <ol style="list-style-type: none"> 1. <i>The learning exercises may be repeated until the trainee acquires targeted competence;</i> 2. <i>The trainer is advised to deliver relevant theoretical instruction with demonstrations as required to perform each learning working assignment</i> |
| Related Practical Exercises (PEXs) | <p>LWA 1/1: Draw Electrical Diagrams PEX 1.1: Design electrical diagrams PEX 1.2: Draw electrical symbols for a lamp, consumer, junction box, meter box, socket outlet PEX 1.3: Develop electrical diagrams</p> |
| | <p>LWA 1/2: Interpret Electrical Diagrams and Sketches PEX 2.1: Interpret lighting circuits PEX 2.2: Interpret socket outlet circuits PEX 2.3: Interpret electrical symbols</p> |
| | <p>LWA 1/3: Perform Basic Measurement and Units Conversion PEX 3.1: Carry out basic measurements, units and quantities PEX 3.2: Calculate values for voltage, current, resistance, and power within the circuit</p> |

| | |
|--|---|
| | <p>LWA 1/4: Perform Occupational Safety, Health and Environmental Protection Practices</p> <p>PEX 4.1: Manage waste PEX 4.2: Administer first aid PEX 4.3: Practice safe use of tools and equipment of PEX 4.4: Domestic electrical work PEX 4.5: Observe sitting posture PEX 4.6: Wear personal protective gears PEX 4.7: Sensitise workers on health issues</p> |
| <p>Occupational health and safety</p> | <p>Precautions, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be observed and demonstrated during LWAs and PEXs.</p> |
| <p>Pre-requisite modules</p> | <p>None</p> |
| <p>Related knowledge/ theory</p> | <p><i>For occupational theory suggested for instruction/ demonstration, the trainer is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate:</i></p> <ul style="list-style-type: none"> • Know different types of sketches and diagrams (block, line, wiring and dotted diagram) • Know types of lines used in sketches & diagrams e.g. broken, dotted, thick and open lines • Define and interpret electrical symbols and signs • Basic mathematics- algebra, arithmetic, trigonometry • The Uganda Industrial standards and drawing • Common rules, sizes and types of drawings • Types and uses of lines • Types and uses of letters • Types of scales • Types of drawing projections |
| <p>Average duration of learning</p> | <p>160 hours (20 days) of nominal learning suggested to include:</p> <ul style="list-style-type: none"> • 5 days of occupational theory and • 15 days of occupational practice |

| | |
|--|---|
| Suggestions on organisation of learning | The acquisition of competencies (skills, knowledge, attitudes) described in this module may take place at a training centre or its equivalent provided that all equipment and materials required for this module training are in place. |
| Assessment | Assessment to be conducted according to established regulations by a recognised assessment body using related written test items from item bank. |
| Minimum required tools/ equipment/ implements or equivalent | drawing boards, set of drawing instruments, T-square, ruler, markers, protractor, compass, set square, divider, paper clips, ICT gadgets, drawing pad |
| Minimum required materials and consumables or equivalent | assorted pencils, rubbers, markers, chalk, drawing paper, plain paper, drawing soft ware |
| Special notes | |

| | |
|--|--|
| Code | UE/DE/M1.2 |
| Module title | M1.2: Perform Domestic Electrical Installations |
| Related Qualification | <u>Part of:</u> Proposed Uganda Vocational Qualification 1 (UVQ 1)- (Domestic Electrician) |
| Qualification Level | 1 |
| Module purpose | At the end of this module, the trainee shall be able to install power and lighting systems in domestic houses of up to 2bedrooms and a magnitude of up to 240Va.c. |
| Learning-Working Assignments (LWAs) | <p>LWA 2/1: Fix Conduits and Boxes LWA 2/2: Draw in Electrical Cables LWA 2/3: Terminate Cable Conductors LWA 2/4: Fix Electrical Accessories LWA 2/5: Perform Earthing Installation LWA 2/6: Carryout Electrical Tests LWA 2/7: Perform Occupational Safety Health and Environmental Protection Practices</p> <p><u>Note:</u></p> <ol style="list-style-type: none"> 1. The learning exercises may be repeated until the trainee acquires targeted competence; 2. The trainer is advised to deliver relevant theoretical instruction with demonstrations as required to perform each learning working assignment. |
| Related Practical Exercises (PEXs) | <p>LWA 2/1: Fix Conduits and Boxes PEX 1.1: Mark out surfaces PEX 1.2: Chase walls through markings PEX 1.3: Position conduits and boxes PEX 1.4: Secure conduits and boxes</p> |
| | <p>LWA 2/2: Draw in Electrical Cables PEX 2.1: Draw in steel (draw) tape to pull cables PEX 2.2: Label cores</p> |

| | |
|---------------------------------------|--|
| | <p>LWA 2/3: Terminate Cable Conductors PEX 3.1: Connect single switched circuits and power circuits PEX 3.2: Insulate bare conductors</p> <p>LWA 2/4: Fix Electrical Accessories PEX 4.1: Connect and mount electrical accessories PEX 4.2: Carryout physical inspections PEX 4.3: Carryout house keeping</p> <p>LWA 2/5: Perform Earthing Installation PEX 5.1: Prepare earthing pit PEX 5.2: Install earthing components PEX 5.3: Test earth resistance</p> <p>LWA 2/6: Carryout Electrical Tests PEX 6.1: Carryout continuity tests PEX 6.2: Carryout polarity tests PEX 6.3: Carryout insulation tests PEX 6.4: Carryout earth loop impedance test</p> <p>LWA 2/7: Perform Occupational Safety Health and Environmental Protection Practices PEX 7.1: Manage waste PEX 7.2: Administer first aid PEX 7.3: Practice safe use of tools and equipment in domestic electrical work PEX 7.4: Observe sitting posture PEX 7.5: Wear personal protective gears PEX 7.6: Practice personal hygiene PEX 7.7: Sensitise workers on health issues e.g. (covid-19 and HIV/AIDS) PEX 7.8: Perform firefighting</p> |
| Occupational health and safety | Precautions, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be observed and demonstrated during LWAs and PEXs. |
| Pre-requisite modules | None |

| | |
|--|--|
| Related knowledge/ theory | <p><i>For occupational theory suggested for instruction/ demonstration, the trainer is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate:</i></p> <ul style="list-style-type: none"> • Sizes of conduits • Cable sizes • Standard measurements of various accessories e.g. consumer units, socket outlet, switches, lamp holder etc. • Quality and quantity of materials determination methods • Labelling of I circuits • Methods of electrical earthing and their application • Procedures of determining continuity, polarity and insulation test • Types of electrical accessories • Recommended cable conductor terminal joints and their application • Types of tests (continuity test, polarity tests, and insulation tests) • Various electrical accessories and their functions • The basic principles in performing different first aid techniques • The essential components of a first aid kit • The features of a safe working environment • The principles in establishing safe working zones • Different protective gears for electricians and their purposes • Methods of infectious diseases prevention • Waste management methods • IEE regulations on safety and health practices • Personal hygiene practices • Procedure of administering first aid • Types of work place accidents |
| Average duration of learning | <p>120 hours (3 weeks) of nominal learning suggested to include:</p> <ul style="list-style-type: none"> • <i>5 days of occupational theory and</i> • <i>10 days of occupational practice</i> |
| Suggestions on organisation of learning | <p>The acquisition of competencies (skills, knowledge, attitudes) described in this module may take place at a training centre or its equivalent provided all equipment and materials required for training are in place.</p> |

| | |
|--|--|
| Assessment | Assessment to be conducted according to established regulations by a recognised assessment body using related practical and written test items from item bank |
| Minimum required tools/ equipment/ implements or equivalent | masonry hammer, chisel, tape measure, pliers, draw tape, cable stripper, hack saw, knife, hoe, drilling machine, lamp tester, accessories, spirit level, side cutter, screw drivers, ladder, multi-meter, mega tester, earth resistance tester, phase tester, |
| Minimum required materials and consumables or equivalent | solvent cement, screws 4BA, 3BA, detergent soap, cotton wool, bandages, cable marker, MK boxes, conduits, charcoal & salt, strip connectors, cables, stickers, insulating tape, water, junction boxes, circular boxes, note books, posters, chalk, overall, safety shoes, helmet, gloves, masks, first aid kit, brooms |
| Special notes | At the end of this module the trainee shall be able to install power and lights systems in domestic houses of up to 2 bedrooms. |

| | |
|--|--|
| Code | UE/DE/M1.3 |
| Module title | M1.3: Maintain Domestic Installation Appliances and Equipment |
| Related Qualification | Part of: Proposed Uganda Vocational Qualification 1 (Domestic Electrician UVQ 1) |
| Qualification Level | 1 |
| Module purpose | The domestic trainee shall be able to maintain domestic installation as well as non-electric control electrical appliances and equipment including all heating equipment of 240v or less |
| Learning-Working Assignments (LWAs) | <p>LWA 3/1: Maintain Domestic Electric Installations LWA 3/2: Maintain non Electric Control Appliances LWA 3/3: Perform Occupational Safety Health and Environmental Protection Practice</p> <p><u>Note:</u></p> <ol style="list-style-type: none"> 1. The learning exercises may be repeated until the trainee acquires targeted competence; 2. The trainer is advised to deliver relevant theoretical instruction with demonstrations as required to perform each learning working assignment. |
| Related Practical Exercises (PEXs) | <p>LWA 3/1: Maintain Domestic Electric Installations PEX 1.1: Maintain earthing installation PEX 1.2: Measure installation resistance PEX 1.3: Maintain electrical circuit (wiring sockets, lights, switches)</p> |
| | <p>LWA 3/2: Maintain non Electric Control Appliances PEX 2.1: Maintain hand held non-electric domestic equipment and appliances PEX 2.2: Maintain free standing electrical domestic equipment</p> |

| | |
|--|---|
| | <p>LWA 3/3: Perform Occupational Safety Health and Environmental Protection Practice</p> <p>PEX 3.1: Manage waste</p> <p>PEX 3.2: Administer first aid</p> <p>PEX 3.3: Practice safe use of tools and equipment in domestic electrical work</p> <p>PEX 3.4: Observe sitting posture</p> <p>PEX 3.5: Wear personal protective gears</p> <p>PEX 3.6: Maintain personal hygiene</p> <p>PEX 3.7: Sensitise workers on health issues e.g. (covid-19 and HIV/AIDS)</p> <p>PEX 3.8: Perform firefighting</p> |
| <p>Occupational health and safety</p> | <p>Precautions, rules and regulations on occupational health safety and environmental protection included in the listed related knowledge should be observed and demonstrated during LWAs and PEXs.</p> |
| <p>Pre-requisite modules</p> | <p>To do repair one must have the knowledge of electrical installation</p> |
| <p>Related knowledge/ theory</p> | <p><i>For occupational theory suggested for instruction/ demonstration, the trainer is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate:</i></p> <ul style="list-style-type: none"> • Describe the symptoms and nature of electric shock • Explain the different causes of shock • Describe the types of injuries that can be suffered and explain the different first aid procedures that can be used • Explain the reasons for performing first aid • Describe the basic principles in performing different first aid techniques • Determine the essential components of a first aid kit • Describe the features of a safe working environment • Explain the principles in establishing safe working zones • Explain the importance of using protective gear • List types of protective gears used by an electrician • List methods in which HIV/AIDS can be transmitted • List methods of waste disposal • IEE regulations on safety and health practices • Personal hygiene practices • Procedure of administering first aid • Types of work place accidents |

| | |
|--|---|
| Average duration of learning | 80 hours (10 days) of nominal learning suggested to include: <ul style="list-style-type: none"> • 5 days of occupational theory and • 5 days of occupational practice |
| Suggestions on organisation of learning | The acquisition of competencies (skills, knowledge, attitudes) described in this module may take place at a training centre or its equivalent provided that all equipment and materials required for this module training are in place. |
| Assessment | Assessment to be conducted according to established regulations by a recognised assessment body using related practical and written test items from item bank |
| Minimum required tools/ equipment/ implements or equivalent | stretchers, barricade, angle grinder, drill machine, ladders, fire extinguishers masonry hammer, chisel, tape measure, pliers, draw tape, cable stripper, hack saw, knife, hoe, lamp tester, accessories, spirit level, side cutter, screw drivers, ladder, multi-meter, mega tester, earth resistance tester, phase tester |
| Minimum required materials and consumables or equivalent | solvent cement, screws , detergent soap, cotton wool, bandages, cable marker, MK boxes, conduits, charcoal & salt, strip connectors, cables, stickers, insulating tape, water, junction boxes, circular boxes, note books, posters, chalk, overall, safety shoes, helmet, gloves, masks, first aid kit, brooms |
| Special notes | |

| | |
|--|--|
| Code | UE/DE/M1.4 |
| Module title | M1.4: Start and Manage an Electrical Enterprise |
| Related Qualification | Part of: Proposed Uganda Vocational Qualification 1 (Domestic Electrician UVQ 1) |
| Qualification Level | 1 |
| Module purpose | After completing this module, a trainee shall be able to start and manage an electrical enterprise |
| Learning-Working Assignments (LWAs) | <p>LWA 4/1: Procure Tools, Materials and Equipment LWA 4/2: Set Up an Electrical Workshop LWA 4/3: Perform Administrative Works LWA 4/4: Keep Records LWA 4/5: Perform Occupational Safety, Health and Environmental Protection Practices</p> <p><u>Note:</u></p> <ol style="list-style-type: none"> 1. <i>The order of execution of the Learning Working Assignments (LWA) may vary.</i> 2. <i>Entrepreneurial skills shall be limited to electrical discipline for these learning exercises</i> 3. <i>The learning exercises may be repeated till the trainee acquires targeted competence;</i> 4. <i>The trainer is advised to deliver relevant theoretical instruction with demonstrations as required to perform each learning working assignment.</i> 5. <i>Learning exercises may be done through alternative means like role plays.</i> |
| Related Practical Exercises (PEXs) | <p>LWA 4/1: Procure Tools, Materials and Equipment PEX 1.1: Determine tools, equipment and materials PEX 1.2: Identify source of tools, equipment and materials PEX 1.3: Negotiate payments terms PEX 1.4: Acquire tools, equipment and materials PEX 1.5: Transport tools equipment and material PEX 1.6: Store tools, equipment and materials</p> |

| | |
|---------------------------------------|---|
| | <p>LWA 4/2: Set Up an Electrical Workshop PEX 2.1: Source capital PEX 2.2: Prepare budget PEX 2.3: Furnish workshop PEX 2.4: Determine workshop location PEX 2.5: Register business PEX 2.6: Acquire operational permits and licences</p> <p>LWA 4/3: Perform Administrative Works PEX 3.1: Recruit workers PEX 3.2: Train workers PEX 3.4: Prepare work schedule PEX 3.4: Assign work PEX 3.5: Pay taxes PEX 3.6: Remunerate workers PEX 3.7: Market electrical services PEX 3.8: Cost electrical services</p> <p>LWA 4/4: Keep Records PEX 4.1: Carry out business audit PEX 4.2: Generate records PEX 4.3: Store records</p> <p>LWA 4/5: Perform Occupational Safety, Health and Environmental Protection Practices PEX 4.1: Display safety signs PEX 4.2: Administer first aid PEX 4.3: Perform firefighting PEX 4.4: Wear personal protective gears PEX 4.5: Practice safe use of tools and equipment in domestic electrical work PEX 4.6: Manage waste</p> |
| Occupational health and safety | Precautions, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be observed and demonstrated during LWAs and PEXs. |
| Pre-requisite modules | None |

| | |
|--|---|
| Related knowledge/ theory | <p><i>For occupational theory suggested for instruction/ demonstration, the trainer is not limited to the outline below. In any case, related knowledge/ theory may be obtained from various recognised reference materials as appropriate:</i></p> <ul style="list-style-type: none"> • Types of records used by electricians • Definition of the different types of documents used by electricians • Components of different types of documents used by electricians • Methods of marketing electrical services • Explain marketing • Definition of information, communication and technology • Types of communications and technologies • Benefits of communication and technology • Procedure of starting an electrical service business • Types of businesses • Types of taxes payable • Procedure of developing a budget and its components • Importance of networking • Dealing with competition • Qualities of an entrepreneur • Characteristics of a successful business |
| Average duration of learning | <p>160 hours (20 days) of nominal learning suggested to include:</p> <ul style="list-style-type: none"> • <i>5 days of occupational theory and</i> • <i>15 days of occupational practice</i> |
| Suggestions on organisation of learning | <p>The acquisition of competencies (skills, knowledge, attitudes) described in this module may take place at a training centre or its equivalent provided that all equipment and materials required for this module training are in place.</p> |
| Assessment | <p>Assessment to be conducted according to established regulations by a recognised assessment body using related practical and written test items from item bank</p> |
| Minimum required tools/ equipment/ implements or equivalent | <p>calculator, telephone set/ mobile phone, electrical tools and equipment, computer</p> |

| | |
|---|---|
| Minimum required materials and consumables or equivalent | pens, pencils, paper, rubbers, rulers, reference text books |
| Special notes | |

3.0 ATP-PART III

Assessment Instruments for a DOMESTIC ELECTRICIAN

- 3.1 Assessment of occupational competence is the procedure by which evidence is gathered and judged to decide if an individual (candidate) has met the stipulated assessment standards.
- 3.2 Assessment of occupational competence should comprise of both practical (performance) testing and written (theory/knowledge) testing.
- 3.3 Based on the Occupational Profile and Training Modules, a combined panel of job practitioners and Instructors developed a substantial number of test items for assessing (practical) performance as well as items for assessing occupational knowledge (theory) all stored in an electronic Test Item Bank (TIB) at the Directorate of Industrial Training.
- 3.4 Performance (Practical) Test Items (PTI) are closely related to typical work situations in Ugandan business enterprises. They comprise of a test assignment for candidates and assessment criteria and/or scoring guides for assessors' use.
- 3.5 Written Test items (WTI) for written testing of occupational theory, (knowledge) are presented in different forms which include:
- Short answer test items.
 - Multiple choice test items
 - Matching test items,
- These WTIs herein focus on functional understanding as well as trouble-shooting typically synonymous with the world of work.
- 3.6 Composition of assessment/test papers will always require good choices of different types of WTI in order to ensure the assessment of relevant occupational knowledge required of candidates to exhibit competence.
- 3.7 The test items contained in the Test Item Bank may be used for continuous/formative assessment during the process of training as well as for summative assessment of candidates who have acquired their competences non-formally or informally.
- 3.8 In this document, samples of test items for assessing both performance (practical) and occupational knowledge (theory) of a DOMESTIC ELECTRICIAN are included.

3.9 Overview of Test Item Samples included:

| No. | Type of Test Item | Number included |
|--------------|---|-----------------|
| 1. | Written (Theory)- short answer | 2 |
| 2. | Written (Theory)- multiple choice- generic | 2 |
| 3. | Written (Theory)- matching item- generic | 2 |
| 4. | Written (Theory)- matching item (work sequence) | 1 |
| 5. | Performance (Practical) test items | 1 |
| TOTAL | | 8 |

WRITTEN TEST ITEMS (SAMPLES)

| DIT/ QS | Test Item Database Written (Theory) Test Item- no. 1 | | | |
|----------------------------|---|---------|--------------|---------------|
| Occupational Title: | Domestic Electrician | | | |
| Competence level: | Level 1 | | | |
| Code no. | | | | |
| Test Item type: | Short answer | √ | | |
| | Multiple choice | | | |
| | Matching item | Generic | Cause-Effect | Work-sequence |
| | | | | |
| Complexity level: | C2 | | | |
| Date of OP: | September 2020 | | | |
| Related module: | M1.2 | | | |
| Time allocation: | 2 minutes | | | |

| | |
|------------------------------|--|
| Test Item | State the size of cables used in lighting and power circuits according to IEE regulations. |
| Answer spaces | (i) (ii) |
| Expected Key (answer) | (i) Power circuits: 2.5mm ² (ii) Light circuit: 1.5mm ² |

| DIT/ QS | Test Item Database Written (Theory) Test Item- no. 2 | | | |
|---------------------|---|---------|--------------|---------------|
| Occupational Title: | Domestic Electrician | | | |
| Competence level: | Level 1 | | | |
| Code no. | | | | |
| Test Item type: | Short answer | √ | | |
| | Multiple choice | | | |
| | Matching item | Generic | Cause-Effect | Work-sequence |
| | | | | |
| Complexity level: | C2 | | | |
| Date of OP: | September 2020 | | | |
| Related module: | M1.3 | | | |
| Time allocation: | 2 minutes | | | |

| | |
|-----------------------|--|
| Test Item | Outline two causes of overheating of cables while in use. |
| Answer spaces | (i) (ii) |
| Expected Key (answer) | (i) Under sizing (ii) Loose connection (iii) Over load (iv) Short circuit |

| DIT/ QS | Test Item Database Written (Theory) Test Item- no. 3 | | | |
|---------------------|---|---------|------------------|-------------------|
| Occupational Title: | Domestic Electrician | | | |
| Competence level: | Level 1 | | | |
| Code no. | | | | |
| Test Item type: | Short answer | | | |
| | Multiple choice | √ | | |
| | Matching item | Generic | Cause- Effect | Work- sequence |
| | | | | |
| Complexity level: | C2 | | | |
| Date of OP: | September 2020 | | | |
| Related module: | M1.2 | | | |
| Time allocation: | 2 minutes | | | |

| Test Item | Which of the following statement is true for bathroom switches? |
|--------------------------------|---|
| Distracters and correct answer | A. Operated by an insulated pull cord B. Made entirely of plastic C. Operated by a rocker switch D. Switch operated outside the bathroom |

| | |
|--------------|---|
| Key (answer) | A |
|--------------|---|

| DIT/ QS | Test Item Database Written (Theory) Test Item- no. 4 | | | |
|---------------------|---|---------|------------------|-------------------|
| Occupational Title: | Domestic Electrician | | | |
| Competence level: | Level 1 | | | |
| Code no. | | | | |
| Test Item type: | Short answer | | | |
| | Multiple choice | √ | | |
| | Matching item | Generic | Cause- Effect | Work- sequence |
| | | | | |
| Complexity level: | C2 | | | |
| Date of OP: | September 2020 | | | |
| Related module: | M1.3 | | | |
| Time allocation: | 1 minute | | | |

| | |
|--------------------------------|--|
| Test Item | In regard to domestic electric protective device, MCB stands for? |
| Distracters and correct answer | A. Main circuit breaker B. Main current breaker C. Miniature current breaker D. Miniature circuit breaker |

| | |
|--------------|---|
| Key (answer) | D |
|--------------|---|

| DIT/ QS | Test Item Database Written (Theory) Test Item- no. 5 | | | |
|---------------------|---|---------|--------------|---------------|
| Occupational Title: | Domestic Electrician | | | |
| Competence level: | Level 1 | | | |
| Code no. | | | | |
| Test Item type: | Short answer | | | |
| | Multiple choice | | | |
| | Matching item | Generic | Cause-Effect | Work-sequence |
| | | √ | | |
| Complexity level: | C2 | | | |
| Date of OP: | September 2020 | | | |
| Related module: | M1.2 | | | |
| Time allocation: | 3 minutes | | | |

| | |
|------------------|--|
| Test item | Match the following electrical causes to their effects |
|------------------|--|

| Column A (Causes) | |
|-------------------|----------------------------------|
| A | Lamp produce no light |
| B | Electric shock from cooker frame |
| C | Overheating of conductor |
| D | Circuit breaker tripped |
| | |
| | |

| Column B (Effects) | |
|--------------------|---------------------|
| 1 | Poor Earthling |
| 2 | Short circuit |
| 3 | Open circuit |
| 4 | Wrong size of cable |
| 5 | Big size of cable |
| 6 | Covered switch |

| | |
|---------------------|--------------------|
| Key (answer) | A-3, B-1, C-4, D-2 |
|---------------------|--------------------|

| DIT/ QS | Test Item Database Written (Theory) Test Item- no. 6 | | | |
|---------------------|---|---------|--------------|---------------|
| Occupational Title: | Domestic Electrician | | | |
| Competence level: | Level 1 | | | |
| Code no. | | | | |
| Test Item type: | Short answer | | | |
| | Multiple choice | | | |
| | Matching item | Generic | Cause-Effect | Work-sequence |
| | | √ | | |
| Complexity level: | C2 | | | |
| Date of OP: | September 2020 | | | |
| Related module: | M1.2 | | | |
| Time allocation: | 3 minutes | | | |

| | |
|------------------|---|
| Test Item | Match the following equipment to their respective functions |
|------------------|---|

| Column A (Functions) | |
|----------------------|--|
| A | Sucks dust from the surroundings |
| B | Converts mechanical energy into electrical power |
| C | Converts electrical power into mechanical energy |
| D | Converts DC power into AC power |
| | |
| | |

| Column B (Importance) | |
|-----------------------|-----------|
| 1 | Motor |
| 2 | Inverter |
| 3 | Converter |
| 4 | Generator |
| 5 | Grinder |
| 6 | Hoover |

| | |
|---------------------|--------------------|
| Key (answer) | A-6, B-4, C-1, D-2 |
|---------------------|--------------------|

| DIT/ QS | Test Item Database Written (Theory) Test Item- no. 7 | | | |
|---------------------|---|---------|--------------|---------------|
| Occupational Title: | Domestic Electrician | | | |
| Competence level: | Level 1 | | | |
| Code no. | | | | |
| Test Item type: | Short answer | | | |
| | Multiple choice | | | |
| | Matching item | Generic | Cause-Effect | Work-sequence |
| | | | | √ |
| Complexity level: | C2 | | | |
| Date of OP: | September 2020 | | | |
| Related modules: | M1.1,M1.2 | | | |
| Time allocation: | 5 minutes | | | |

| | |
|------------------|---|
| Test Item | Arrange the following steps in the correct order taken when installing surface sockets in a room using radial circuit |
|------------------|---|

| Column A (chronology) | Column B (work steps) in wrong chronological order | |
|--------------------------|--|--|
| 1 st | A | Fix socket accessories in their positions |
| 2 nd | B | Drill out points for fixing the accessories i.e. MK boxes, main switch |
| 3 rd | C | Select required tools and materials |
| 4 th | D | Draw sketch diagram indicating positions of the accessories |
| 5 th | E | Carry out testing |
| 6 th | F | Lay cables |
| 7 th | G | Carry out terminations |
| 8 th | H | Fix MK and main switch |

| | |
|---------------------|--|
| Key (answer) | 1-D, 2-C, 3-B, 4-H, 5-F, 6-A, 7-G, 8-E |
|---------------------|--|

PERFORMANCE TEST ITEMS (SAMPLES)

| DIT/ QS | Test Item Database Performance Test Item- no. 8 |
|---|---|
| Occupational Title: | Domestic Electrician |
| Competence level: | Level 1 |
| Code no. | |
| Test Item: | Install two socket-outlets and 2 lamps in a two roomed house using a 20mm PVC full conduit on the surface. The lamps should be controlled independently. |
| Complexity level: | P1 |
| Date of OP: | September 2020 |
| Related Modules: | M1.2 |
| Related skills and knowledge: | Describe different materials for domestic conduit work, explain the principles of electrical circuits, Select and measure different types of materials, explain the different units of measurements in installations, occupational safety and environment. |
| Required tools, materials and equipment: | Hammer, pair of pliers, spring bender, set of screw drivers, tape measure, spirit level, draw tape, hacksaw, cable stripper, phase tester, multi-meter, drilling machine, bulbs lamp holders, sockets, switches, junction box, circular box, bushings, PVC conduit, saddles, MK boxes, self-tap screws, wall plugs, draw tape |
| Time allocation: | 2 Hours |
| Preferred venue: | Construction site |
| Remarks for candidates | <ul style="list-style-type: none"> • Any problems arising during the operation of power tools, should immediately be brought to the attention of the Assessor Team • Observe health and safety precautions |
| Remarks for assessors | <ul style="list-style-type: none"> • Provide materials and tools (listed above) • Provide for the site |

| # | Assessment criteria | Scoring guide | Max. Score | |
|--|-------------------------------------|--|------------|--------|
| | | | Process | Result |
| 1 | Preparation for the task | Wore protective gears (Safety boots, helmet, over coat, gloves) | 4 | |
| | | Selected tools, equipment and materials | | 2 |
| | | Tested tools and equipment for functionality | | 2 |
| 2 | Laying of conduits | Positions for mounting saddles drilled | 4 | |
| | | Wall observed with no cracks | | 2 |
| | | Fixed wall plugs in holes | 2 | |
| | | Plugs flashing with wall observed | | 2 |
| | | MK box mounted | 3 | |
| | | Firmly mounted MK boxes observed | | 2 |
| | | Fixed conduit | 3 | |
| | | Conduits firmly fixed using saddles | | 2 |
| | | Conduits fixed on MK box using bushes | | 3 |
| | | MK box mounted 300mm – 500mm for sockets and 1500mm-1600 for switches from finished floor verified | | 4 |
| | | Drew in Cables in the conduit | 2 | |
| | | Used a draw tape to insert cables | 1 | |
| | | Stripped off insulation | 2 | |
| | | No damage to conductors | | 1 |
| | | Used a stripping tool or stripping knife | 1 | |
| Terminated conductors | 3 | | | |
| Electrically sound and mechanically firm joints observed | | 2 | | |
| 3 | Testing for continuity and polarity | Colour codes observed - red/brown - Live - black/blue - Neutral - yellow/green- Earth | 3 | |

| # | Assessment criteria | Scoring guide | Max. Score | |
|--------------------------|---------------------------------|--|------------|-----------|
| | | | Process | Result |
| | | Accessory connected - Socket outlets - Switches - bulbs | 3 | |
| | | Conductors tightened, wires cannot be pulled apart | | 3 |
| | | Mains switched off and circuit connected to the supply | 4 | |
| | | Lighting circuit observed connected to the 5amps circuit breaker | | 2 |
| | | Socket circuit observed connected to 15 amps circuit breaker | | 2 |
| 4 | Testing circuit on power supply | Isolated main supply before connecting on the main supply | 4 | |
| | | Switch on supply after connecting circuit | 2 | |
| | | On switching on, there was evidence of power supply | | 4 |
| 5 | House keeping | Demobilized tools and equipment | 2 | |
| | | Cleaned tools and equipment | 2 | |
| | | Stored tools, equipment and remaining materials | 2 | |
| | | Organised work area observed | | 2 |
| TOTAL | | | 47 | 34 |
| MAXIMUM SCORE (Y) | | X/Y X100 | 81 | |

4.0 ATP- PART IV

INFORMATION ON REVIEW PROCESS

4.1 Occupational Profile Review (September 2020)

The Occupational Profile was exclusively reviewed by job practitioners who were working in the occupation of Domestic Electrician. The job expert panel, guided by UVQF Facilitators defined duties and tasks performed and provided additional generic information regarding the occupation.

4.2 Test Item Review (September 2020)

Based on the Occupational Profile for Domestic Electrician of September 2020, test items were reviewed by combined panels of Instructors and job practitioners, guided by UVQF Facilitators.

4.3 Training Module Review (September 2020)

Based on the Occupational Profile) for Domestic Electrician of September 2020, training modules were developed by combined panels of Instructors and job practitioners, guided by UVQF Facilitators.

4.4 Methodology

The rationale for the Assessment and Training Package development was to link Vocational Education and Training to the real world of work by bridging Occupational Standards to training standards through industry-led standards-based assessment.

Active participation of both public and private partners, urban and rural panels consolidated the development philosophy.

The panellists worked as teams in workshop settings complemented by off workshop field research and literature review activities including international benchmarking.

4.5 Review panels:

The participating panels of Job Practitioners and Instructors required at different stages were constituted by members from the following organisations:

| Review Panel | | |
|--------------|--------------------|--------------------------------------|
| S/no | Name | Organisation |
| 1. | Kiyingi Mathias | Ntinda Vocational Institute |
| 2. | Mukasa Ssonko John | Nice House of Plastics |
| 3. | Lwanga Shakillah | Nakawa Vocational Training Institute |
| 4. | Odama Ericson | Electri-Fix |
| 5. | Kavubu John Bosco | Mt. St. Mary's Namagunga |
| 6. | Mujurizi Vincent | Ntare School, Mbarara |
| 7. | Wakabi Yusuf | KMS Global Electrical Relief |
| 8. | Waggumba Kenneth | Roofings Rolling Mills |
| 9. | Janja Benard | NCDC |
| 10. | Tushabe Rossette | Lugogo Vocational Institute |

4.6 Facilitator team

This Assessment and Training Package was reviewed by a Facilitator team listed below:

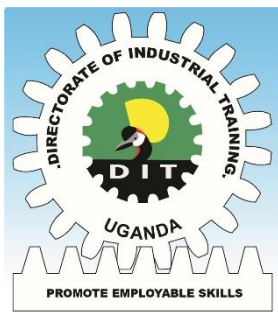
1. **Team Leader:** Ms Mukyala Ruth Ag. Deputy Director/QS Dept, DIT
2. **Facilitators:** Mrs. Komugisha Noeline, Ms. Nuwayongyera Phionah,
3. **Data Entrants:** Mr Mugubya Ben, Najjuma Doreen, Namazzi Monica
4. **Complied by:** Ms. Najjuma Doreen
5. **Edited by:** Qualifications Standards Department, DIT;
6. **Coordinated by:** Mr. Byakatonda Patrick, Ag. Director, DIT; and Ms. Mukyala Ruth Ag. Deputy Director QS Dept. DIT

4.7 Reference time:

The Assessment and Training Package was reviewed in September 2020 and may be periodically revised again to match the dynamic trends in the occupation and hence issued in different versions.

References

1. *Thompson I,II, Electrical Installation Work*
2. *Lewis Maurice Electrical Installation Technology*
3. *E.L Donnelly Electrical Installation Theory and Practice*
4. *Hughes Edward Principles of Electricity*
5. *Clifford M Engineering drawing from first principles*



ISBN 978-9913-626-71-2



9 789913 626712