THE REPUBLIC OF UGANDA
Ministry of Education and Sports

Business, Technical, Vocational Education and Training [BTVET] Subsector

Assessment and Training Package For PLUMBER

Qualification Level: 1
Occupational Cluster: Technology and Design

January 2022

Developed by:
Qualifications Standards Department
Directorate of Industrial Training
DIT

Funded by:
Government of Uganda

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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; and
(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 define:
(a) Occupational standards in the world of work;
(b) Assessment standards;
(c) Vocational qualifications of learners who meet the set standards of different studies;
(d) Provide guidelines for 1 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; and
(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 recognized in the Uganda education system and by the labor 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) Harmonizing 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 and
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 organizes 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

The Ministry of Education and Sports (MoES) in co-operation with the private sector and other stakeholders embarked on reforming Business, Technical and Vocational Education and Training (BTVET) in Uganda. The reform led to the establishment of a Uganda Vocational Qualifications Framework (UVQF) based on Competence-Based Education and Training (CBET) principles.

The advantages of CBET include improved access, equity and relevance of BTVET, reduced unit costs of training, and recognition of Prior Learning (or on-the-job- training), among others.

As the Ministry executes its obligation of ensuring quality in training standards, the public-private partnership is being strengthened to improve occupational competence of the country's workforce without gender bias.

Further to efforts to link Education and Training to the real world of work, the Ministry through the BTVET department set up the Uganda Vocational Qualifications Framework (UVQF) Secretariat in 2004 which was main-streamed into DIT in 2008 as the Qualifications Standards Department.

To achieve the set-out targets in the reform process, the Directorate embarked on the anticipated UVQF design and development piloting its instruments and mechanisms in order to effectively enhance Competence-Based Education and Training (CBET) in Uganda.

To date, the Qualifications Standards Department of DIT has produced Assessment and Training Packages (ATP) for various occupations. Each ATP contains 3 parts namely:

1. Occupational/job Profile
2. Training modules and
3. Assessment instruments Banks

The ATP 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 & Training Package (ATP)" for training, assessment and certification of **PLUMBER.**

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

Ketty Lamaro
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 plumber.
This Occupational Profile which was developed by Industrial electrician practicing in the world of work mirrors the duties and tasks Industrial electrician are expected to perform.

0.2 **PART II: "Training Modules"** in the form of guidelines to train Plumber both on the job as well as in training centers (or combinations of both venues of learning). The Training Modules herein have been developed 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 plumber. These assessment instruments were developed jointly by job practitioners (PLUMBER) 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 1 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 of time allowing flexibility for learners to move directly into an entry level job, go for further modules or advance to higher levels of training. 1 courses allow more learners to access the training system because training centers as well as companies can accommodate more students 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).

[1] *In this document, only sample test items for assessing (practical) performance and occupational knowledge (theory) are included. A larger selection of test items can be obtained from an electronic Test Item Bank at Directorate of Industrial Training*

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

i Part 1: Occupational Profile ***January 2022***
ii Part 2: Training Modules: ***January 2022***
iii Part 3: Assessment Instruments (initial bank): ***January 2022***

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

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 organizations:

- 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;
- Examination Specialists from UNEB
- The facilitators involved in guiding the development panel in their activities;
- The Government of Uganda for financing the development of this ATP

Abbreviations and Acronyms

A&C	Assessment & Certification
ATP	Assessment & Training Packages
BTVET	Business, Technical and Vocational Education and Training
CBET	Competency Based Education and Training
DIT	Directorate of Industrial Training
ITC	Industrial Training Council
GoU	Government of Uganda
LWA	Learning-working Assignment
MC	1 Curriculum
MoES	Ministry of Education and Sports
OP	Occupational Profile
PEX	Practical Exercise
PTI	Performance (Practical) Test Item
QS	Qualification Standards
RPL	Recognition of Prior Learning
TIB	Test Item Bank
UVQ	Uganda Vocational Qualification
UVQF	Uganda Vocational Qualifications Framework

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.

Certification Certification is a formal procedure to issue a certificate (qualification) to an individual that has demonstrated during formal assessment that he/she is competent to perform the tasks specified in the occupational profile.

Competence (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 programs:

1. have content directly related to work
2. focus is on 'doing something well'
3. assessment is based upon industry work standards, and
4. curricula are developed in 1 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 LWAs are real work situations /assignments.

Modules Modules are part(s) of a 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) An Occupational Profile is an overview of the duties and tasks a job incumbent is expected to perform competently in employment.

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.

	Occupational Profiles define WHAT a person is supposed to do in performance terms. It also contains generic information regarding related knowledge and skills, attitudes/behavior, tools, materials and equipment required to perform as well as trends/ concerns in the occupation. Occupational profiles are the reference points for developing 1 curricular and assessment standards
Qualification	A qualification is a formal recognition for demonstrating competence, based on formal assessment against set standards. A qualification is provided to the individual in 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 Performed and measured. *(see also: Duty)*

1.0 ATP-PART I
Occupational Profile for Plumber

1.1 The OCCUPATIONAL PROFILE (OP) for "Plumber" below defines the ***Duties*** and ***Tasks*** a competent plumber 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.[1]

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 define 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.

The panelists, facilitators and coordinators who participated in developing this Occupational Profile for Plumber are listed on the following page

Job Expert Panel

Kavuma Abukaker
National Curriculum Development Center

Iranya Christopher
Uganda Police Force

Bukenya Jonathan
Davis & Shirtliff

Rukundo Emmanuel
Emmanuel Technical Services

Pinyipeteki John Paul
Sun power Sustained Energy

Nkwanga David
Nakawa Vocational Institute

Tubugwisa Yonnah
Ntinda Vocational Institute

Simbwa Ronald
Kisubi Vocational Institute

Kayongo Micheal
Gayaza High School (UNEB)

Ntalo Robert
UNEB
Co-ordinator
Mukyala Ruth Elizabeth
Directorate of Industrial Training
Facilitators
Kyatuhire Fortunate
Directorate of Industrial Training
Nabirye Asha
Directorate of Industrial Training

THE REPUBLIC OF UGANDA
Ministry of Education and Sports

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

Occupational Profile

of a

PLUMBER

Developed by: Qualifications Standards Department

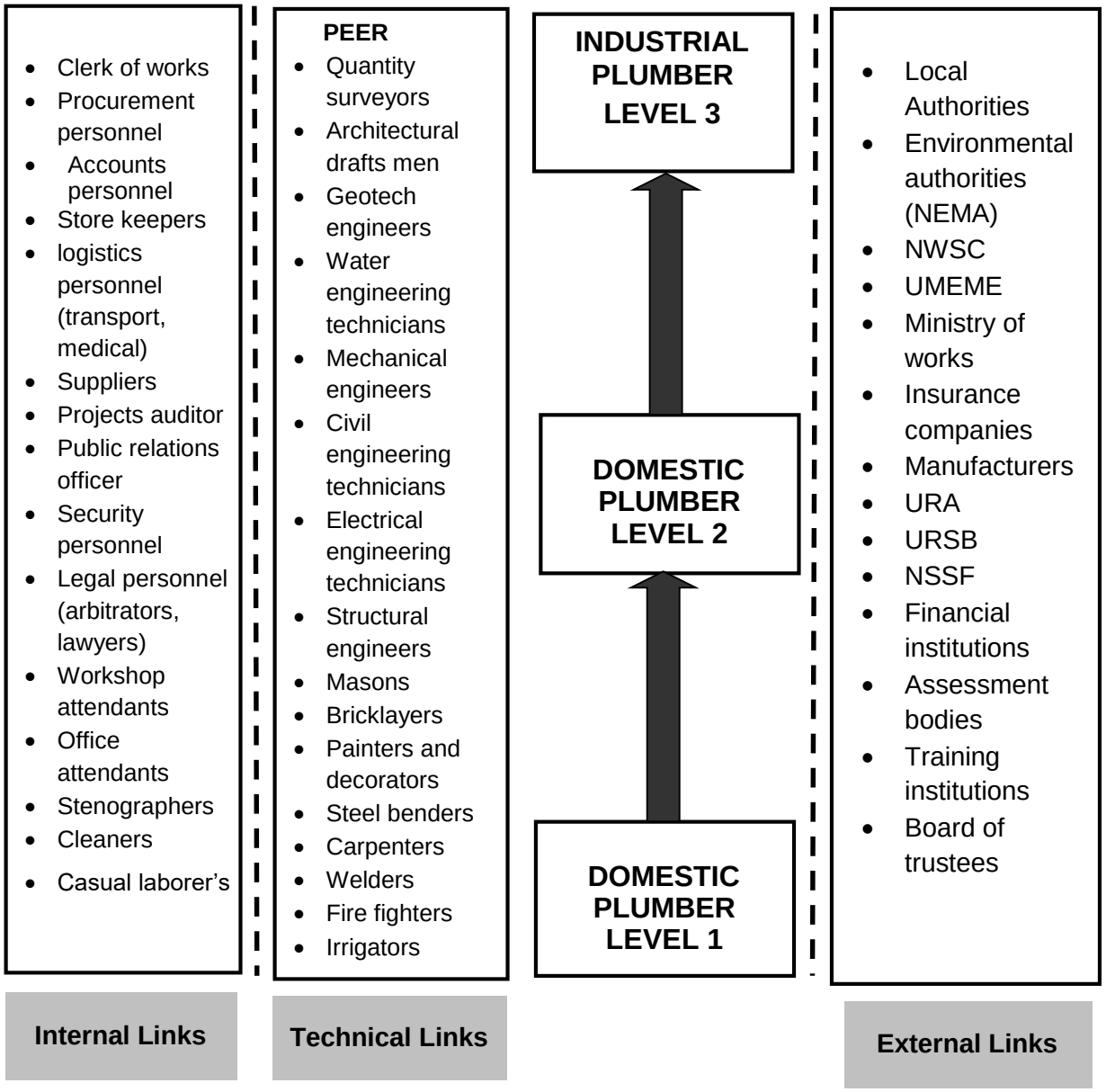
Directorate of Industrial Training

Dates of workshop:3rd-7thJan 2022

NOMENCLATURE FOR THE OCCUPATION OF A PLUMBER

Definition: A plumber is a person who performs installation, repair and maintenance of water, drainage and sewerage systems.

JOB ORGANISATION CHART FOR a Plumber



UVQ Level I: Domestic Plumber is a person who interprets pipe work drawings, perform routine repairs and maintenance of plumbing fittings and executes piping work.

UVQ Level II: Domestic Plumber is a person who interprets designs and drawings, drafts sketches, lays and maintains sanitary fittings.

UVQ Level III: Industrial plumber is a person who makes plumbing designs and drawings, lay fixtures and executes proper waste management.

Duties and Tasks

A. PLAN PLUMBING WORK	**A1** Conduct site visit	**A2** Take measurements	**A3** Install design soft ware
	A4 Draft designs and drawings	**A5** Interpret designs and drawings	**A6** Review design and drawings
	A7 determine piping method	**A8** Present work plan	**A10** Prepare bills of quantities
	A9 Procure materials and fittings	**A10** Determine labour requirements	**A10** Prepare work schedule

B. PREPARE DRAINAGE AND SEWERAGE PIPELINE NETWORK	**B1** Map out surfaces	**B2** Open surfaces	**B3** Excavate ground for pipe work
	B4 Chase walls	**B5** Excavate manhole	**B6** Excavate septic tank
	B6 Stabilize ground	**B6** Timber ground	

C. LAY DRAINAGE AND SEWERAGE PIPELINE NETWORK	**C1** Select materials and fittings	**C2** Measure and cut pipes	**C3** Ream pipes
	C4 Thread pipes	**C5** Apply jointing compound	**C6** Fix fittings
	C7 Check gradient	**C8** Fix supports	**C9** Cconstruct inspection chambers
	C10 Carry out testing	**C11** Perform finishing	

D. INSTALL APPLIANCES	**D1** Select appliances	**D2** Carry out marking	**D3** Support appliances
	D4 Check appliance level and firmness	**D5** Assemble fixtures	**D6** Fit fixtures
	D7 Test appliance performance	**D8** Orient user	

E. INSTALL COLD AND HOT WATER SYSTEM	**E1** Identify materials and fittings	**E2** Determine jointing method	**E3** Install storage cistern
	E4 Join pipes and fittings	**E5** Install water cylinders	**E6** install circulation pump
	E7 Perform insulation	**E8** Mount hot and cold water accessories	**E9** Test-run system

F. INSTALL GAS SYSTEM	**F1** Determine materials	**F2** Fix gas pipes	**F3** Connect gas cylinder
	F4 Connect appliances	**F5** Fit safety valves and meter gauges	**F6** Operate system
	F7 Check joint pressure faults		

G. MAINTAIN AND REPAIR PLUMBING SYSTEMS	**G1** Assess system	**G2** Prepare materials, tools and equipment	**G3** Rectify faults
	G4 Perform trial tests	**G5** Perform servicing	**G6** Carry out periodic checks

H. FABRICATE PLUMBIMG FIXTURES	**H1** Draft sketches	**H2** Interpret drawings	**H3** Source for materials
	H4 Take dimensions	**H5** Make fixtures	**H6** Fit fixtures
	H8 Carry out finishing		

I. PERFORM OCCUPATIONAL HEALTH, SANITATION & ENVIRONMENTAL PRACTICES	**I1** Wear protective gears	**I2** Display safety signs	**I3** Administer first aid
	I4 Maintain personal hygiene	**I5** Demarcate work area	**I6** Manage waste
	I7 Sensitize on communicable and non-communicable diseases	**I8** Identify risks and hazards	**I9** Perform fire fighting

Additional Information

Generic knowledge & skills

1. Tools, materials and equipment usage, operation and maintenance
2. Interpersonal skills
3. Leadership skills
4. Planning skills
5. Supervisory skills
6. Computer knowledge and skills (e.g. CAD)
7. Procurement procedures
8. Decision making skills
9. Literacy and numeracy
10. Site rules and regulations
11. Communication skills
12. Time management
13. Measurements
14. Applied science and mathematics
15. Industrial relations
16. Labour laws
17. Waste management
18. Basic Electrical principles
19. Types of pipes
20. Maintenance
21. Gradient
22. Timbering of trenches
23. Basic principles of building and construction
24. Public water supply networks,
25. Sewage treatment
26. Drainage
27. Tools and equipment usage
28. User manual interpretation
31 Rain water harvesting
32 Gas heating systems
33 Solar heating systems
34 Solar pumping systems
35 Fire -fighting systems
36 Ratio of materials
37 Pipe processing
38 Riveting
39 Seaming
40 Technical terminologies
41 Hot and cold-water systems
42 Water treatment
43 Welding
44 Technical drawing
45 Sanitary fittings and appliances
46 Tapping
47 First Aid administration
48 Drilling
49 Clipping
50 Entrepreneurship
51 Types of fittings
52 Pressure testing
53 Jointing materials
54 Record keeping
55 Fabricating
56 Financial literacy
57 Resource mobilization and management

Attitudes / Traits / Behaviours

1. Honest
2. Self motivated
3. Disciplined
4. Tolerant
5. Trust worthy
6. Hardworking
7. Dedicated
8. Team player
9. Responsible
10. Cooperative
11. Confident
12. Self-criticism
13. Creative
14. Polite
15. Vigilant
16. Respectful
17. Logical
18. Time conscious
19. Accurate
20. Observant
21. Good decision maker
22. Good vision
23. Sense of detail
24. Cost conscious
25. Quality conscious
26. Flexible
27. Innovative
28. Organised
29. Obedient
30. Smart
31. Willing to improve
32. Sensitive to safety, health and environmental protection
33. Good customer care
34. Result orientated

Future Trends and Concerns

1. Assessment and certification of practitioner
2. Adoption of modern Technologies
3. Open to New and Changing Technologies
4. Creation of awareness for Health, Safety and environmental laws
5. Engineering software
6. Formation of professional associations
7. Capacity building workshops for continuous professional development.
8. Skills competitions

2.0 ATP – PART II

Training Modules for Plumber

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 that provides the benchmark for Curriculum development as well as assessment.

2.2 This 1 format of the curriculum allows learners of Plumber 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. 1 courses allow more learners to access the training system because training centers, as well as companies can accommodate more students in a given period of time.

2.3 The modules were reviewed jointly by both instructors and job practitioners. They were reviewed using the Occupational Profile as a reference point and taking into account the specifications of training and learning outcomes.

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.

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, at the workplace; or a combination of both.

WHO IS A PLUMBER QUALIFICATION LEVEL1?

A Plumber level1 is a person who interprets pipe work drawings, drafts sketches, maintains and executes piping work.

TRAINING MODULES FOR A PLUMBER UVQ LEVEL 1

Code	Module Title	Average duration	
		Contact hours	Weeks
UE/PL/M1.1	Install sanitary appliances	200	5
UE/PL/M1.2	Install cold and hot water supply system	160	4
UE/PL/M1.3	Install and lay drainage systems	200	5
UE/PL/M1.4	Maintain water piping system, appliances and fittings	200	5
UE/PL/M1.5	Harvest rain water from the roof	200	5
TOTAL	**5 Training modules**	**960**	**24**

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 160hours 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 instructions, as the minimum exposure.

Prior to summative assessment by recognized Agencies, the users of these Modules Guides are encouraged to carefully consider continuous assessment using samples of (or similar) performance (practical) and written test items available in part 3 of this ATP for PLUMBER.

Code	UE/PL/M1.1
Module title	**M1.1: Install sanitary appliances**
Related Qualification	Part of Uganda Vocational Qualification (PLUMBER UVQF1)
Qualification Level	1
Module purpose	After completion of this module, a trainee will be able to install sanitary appliances.
Learning-Working Assignments (LWAs)	**LWA1/1: Fix wash hand basin** **LWA1/2: Fit kitchen Sink** **LWA1/3: Fix water closet** **LWA1/4: Fix urinal** **LWA1/5: Mount bath tub** **LWA1/6: Fix shower** **LWA1/7: Fit dobby sink/cleaners sink** **LWA1/7: Perform occupational health, safety and environmental protection practices** ***Note:*** *1. The learning exercises may be repeated till 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)	**LWA1/1: Fix wash hand basin** PEX 1:1: Interpret working drawing PEX 1:2: Select tools, equipment and materials PEX 1:3: Mark out positions PEX 1:4: Prepare surfaces PEX 1:5: Fix wash hand basin PEX 1:6: Assemble and fit accessories PEX 1:7: Test performance PEX 1:8: Perform finishing
	LWA1/2: Fit kitchen Sink PEX 2:1: Interpret working drawing PEX 2:2: Sort out tools, equipment and materials PEX 2:3: Mark out positions PEX 2:4: Prepare surfaces PEX 2:5: Fix kitchen sink PEX 2:6: Assemble and fit accessories PEX 2:7: Test performance PEX 2:8**:** Perform finishing

	LWA1/3: Install Water closets PEX 3:1: Interpret working drawing PEX 3:2: Select tools and equipment PEX 3:3: Take measurements PEX 3:4: Mount pan PEX 3:5: Check level PEX 3:6: Install flushing cistern PEX 3:7: Check working performance
	LWA1/4: Fix urinal PEX 4:1: Interpret drawings PEX 4:2: Select tools and equipment PEX 4:3: Measure and mark fixing height PEX 4:4: Prepare surface PEX 4:5: Fix hungers and urinal bolts PEX 4:6: Mount urinal PEX 4:7: Join drain pipe PEX 4:8: Support pipe PEX 4:9: Check fault and firmness PEX 4:10: Apply mortar PEX 4:11: Cover pipe with cement mortar PEX 4:12: Perform finishing
	LWA 5/1: Mount bath tub PEX 5:1: Select tools and equipment PEX 5:2: Assemble accessories PEX 5:3: Fix accessories PEX 5:4: Position tub PEX 5:5: Check levels PEX 5:6: Fix tiles around bath tub PEX 5:7: Check working performance
	LWA1/6: Fix shower PEX 6:1: Interpret drawing PEX 6:2: Select tools, materials and equipment PEX 6:3: Measure and mark fixing height PEX 6:4: Prepare surface PEX 6:5: Join pipes for cold and hot water PEX 6:6: Support pipes PEX 6:7: Fix shower mix tap PEX 6:8: Fix shower head PEX 6:9: Place shower tray PEX 6:10: Check faults PEX 6:11**:** Perform finishing

	LWA1/7: Fit dobby sink/cleaners sink PEX 7/1: Interpret drawing PEX 7/2: Select drawing PEX 7/5: Take measurements PEX 7/6: Assemble parts PEX 7/7: Fix support brackets PEX 7/8: Install sink PEX 7/9: Check level PEX 7/10: Check working performance
	LWA 1/7: Perform Occupational Health, Safety and Environment Protection Practices PEX 7:1: Wear protective gears PEX 7:2: Display safety signs PEX 7:3: manage waste PEX 7:4: Clean workplace PEX 7:5: Clean tools and equipment PEX 7:6: Maintain personal hygiene PEX 7:7: Administer first aid PEX 7:8: Perform fire fighting PEX 7:9: Store tools, materials and equipment
Occupational health and safety	Practices, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be Performed and demonstrated during LWAs and PEXs
Pre-requisite modules	None
Related knowledge/ theory	*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 recognized reference materials as appropriate:* • Literacy • Numeracy • Fixing methods • Standard fixing heights • Types of sanitary appliances • Working procedures • Tools maintenance
Average duration of learning	200hours (5weeks) of nominal learning suggested to include; 4 days of Occupational theory 21days Occupational practice
Suggestions on organization of learning	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.
Assessment	Assessment to be conducted according to established regulations by recognized assessment body using related Practical and Written Test Items from Item bank

Minimum required tools/ equipment/ implements or equivalent	Chisel, tape measure, spirit level, screw drivers, adjustable spanners, stock and die, PPR machine, Trowel, Hoe, Pick axe, Hammer, Hacksaw, Drill, ,
Minimum required materials and consumables or equivalent	paper, pencils, helmet, gloves, connectors, cotton wool, glue,, grease, overall, insulating tape, screws and nuts, safety shoes, accessories, detergent, security tape, brushes, field windings, control switches, cables, masks, First aid kit, brooms
Special notes	

Code	UE/PL/M1.2
Module title	**M1.2: INSTALL COLD AND HOT WATER SUPPLY SYTEMS**
Related Qualification	Part of Uganda Vocational Qualification (DOMESTIC PLUMBERUVQ1)
Qualification Level	1
Module purpose	After completion of this module, a trainee will be able to install Cold and Hot water systems
Learning-Working Assignments (LWAs)	**LWA 2/1: Install Direct cold water system** **LWA 2/2: Install Indirect cold water systems** **LWA 2/3: Install modified indirect water system** **LWA 2/4: Install direct hot water systems** **LWA 2/5: Perform occupational health, safety and environmental protection practices** ***Note:*** *1. The learning exercises may be repeated till 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)	**LWA2/1: Install Direct cold water system** PEX 1.1: Interpret working drawing PEX 1.2: Select tools, equipment and materials PEX 1.3: Mark out positions PEX 1.4: Prepare ground and surfaces PEX 1.5: Cut pipes PEX 1.6: Thread pipes PEX 1.7: Join pipes PEX 1.8: Fit pipes PEX 1.9: Support pipes PEX 1.10: Test for leakages PEX 1.11 Perform finishing.
	LWA2/2: Install Indirect cold water system PEX 2.1: Interpret working drawing PEX 2.2: Select tools, equipment and materials PEX 2.3: Mark out positions PEX 2.4: Prepare ground and surfaces PEX 2.5: Cut pipes PEX 2.6: Thread pipes PEX 2.7: Join pipes PEX 2.8: Fix pipes and fittings PEX 2.10: Connect supply pipe to storage cistern PEX 2.11: Connect distribution pipe PEX 2.12: Connect kitchen sink to supply pipe PEX 2.13: Connect appliances to distribution pipe PEX 2.14 Test for leakages PEX 2.14: Perform finishing

	LWA2/3: Install modified indirect cold water system PEX 3.1: Interpret working drawing PEX 3.2: Sort out tools, equipment and materials PEX 3.3: Mark out positions PEX 3.4: Prepare ground and surfaces PEX 3.5: Fit pipes PEX 3.6: Support pipes PEX 3.7: Perform Testing PEX 3.8: Perform finishing
	LWA 2/4: Install Direct hot water system PEX 4.1: Interpret working drawing PEX 4.2: Select tools, equipment and materials PEX 4.3: Prepare surface PEX 4.4: Cut pipes PEX 4.5: Thread pipes PEX 4.7: Join pipes PEX 4.7: Fit pipes PEX 4.8: Mount cylinder PEX 4.9: Connect cold water supply pipe PEX 4.10: Connect discharge pipe from heater to appliances PEX 4.11: Connect valves PEX 4.12: Mount water heater PEX 4.13: Connect mixer taps to appliances PEX 4.14: Perform Testing PEX 4.15: Perform finishing
	LWA2/5: Perform Occupational Health, Safety and Environment Protection Practices PEX5.1: Wear protective gears PEX5.2: Display safety signs PEX5.3: Manage waste PEX5.4: Clean workplace PEX5.5: Clean tools and equipment PEX5.5: Maintain personal hygiene PEX5.5: Administer first aid PEX5.5: Perform fire fighting PEX5.6: Store tools, materials and equipment
Occupational health and safety	Practices, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be Performed and demonstrated during LWAs and PEXs
Pre-requisite modules	None

Related knowledge/ theory	*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 recognized reference materials as appropriate:* • *Equipment and tools usage* • *Numeracy* • *Literacy* • *Diagnostic skills* • *Operational procedures* • Properties of materials • Construction materials • Measurements • Rules and regulations concerning appliances • Technical drawing • Plumbing science • Concrete and brick laying • Safety precautions • User Manual interpretation • Quotation • Insulation
Average duration of learning	160hours (4 weeks) of nominal learning suggested o include; • 4 days for Occupational theory • 16 days for Occupational practice
Suggestions on Organization of learning	The acquisition of competencies (skills, knowledge, attitudes) described in this module may take place at a training center or its equivalent provided all equipment and materials required for training are in place.
Assessment	Assessment to be conducted according to established regulations by recognized assessment body using related Practical and Written Test Items from Item bank
Minimum required tools/ equipment/ implements or equivalent	PPR machine, pipe wrenches, Plumb bob, spirit level, trowel, steel float, hammer, wrench, adjustable spanners, hacksaw, tape measure, plier, screw drivers, hoes, pick axe, shovel, chisel, drill, grinder, Gas cylinders, stock and die, PPR welding machine**,**
Minimum required materials and consumables or equivalent	Cement, aggregates, water, sand, bricks, adhesives, sand paper, brackets, bolts and nuts, thread tape, solvent cement, boss white, yarn, wall plugs, screws, clips, electricity, insulation materials
Special notes	

Code	UE/P/M3.3
Module title	**M3.3:** Install and lay drainage system
Related Qualification	Part of: Uganda Vocational Qualification (PLUMVBER UVQ1)
Qualification Level	1
Module purpose	By the end of this module, the trainee will be able to Install and lay drainage system
Learning-Working Assignments (LWAs)	**LWA3/1: Construct above ground drainage system (single stack system, one pipe system, Two pipe system)** **LWA3/2: Construct below ground drainage system (Combined system, separate system, partial separate)** **LWA 3/3: Perform Occupational Health, Safety and Environment Protection Practices** **Note:** 1. *The learning exercises may be repeated till the trainee acquires a 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)	**LWA3/1: Perform above ground sanitary pipe network (single stack system, one pipe system, Two pipe system)** PEX 3.1: Interpret drawings PEX 3.2: Prepare tools and materials PEX 3.3: Erect scaffolds PEX 3.4: Map out position PEX 3.5: Chase walls PEX 3.6: Join pipes and fittings PEX 3.7: Support stack PEX 3.8: Check faults PEX 3.9: Perform finishing
	LWA3/2: Lay below ground drainage system (Combined system, separate system, partial separate) PEX 3.1: Interpret drawings PEX 3.2: Prepare tools and materials PEX 3.3: Map out position PEX 3.4: Perform excavation PEX 3.5: Join pipes and fittings PEX 3.6: Lay pipes PEX 3.7: Support drainage pipes PEX 3.8: Construct inspection chambers PEX 3.9: Check faults PEX 3.10: Perform finishing

	LWA3/3: Perform Occupational Health, Safety and Environment Protection Practices PEX3.1: Wear protective gears PEX3.2: Display safety signs PEX3.3: Manage waste PEX3.4: Clean workplace PEX3.5: Clean tools and equipment PEX3.5: Maintain personal hygiene PEX3.5: Administer first aid PEX3.5: Perform fire fighting PEX3.6: Store tools, materials and equipment
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	*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:* • Properties of materials • Construction materials • Measurements • Knowledge concerning flow and gradient • Rules and regulations governing sewerage and drainage system • Technical drawing • Plumbing science • Safety precautions • Mathematics • Quotation • Soil Properties
Average duration of learning	200 hours (5weeks) of nominal learning suggested to include • *4days of occupational theory and* • *21days of occupational practice*
Suggestions on organization of learning	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.
Assessment	Assessment to be conducted according to established regulations by recognised assessment body using related practical and written test items from Item bank

Minimum required tools/ equipment/ implements or equivalent	Plumb bob, spirit level, trowel, steel float, hammer, wrench, hacksaw, tape measure, plier, screw drivers, hoes, pick axe, shovel, chisel, drill, grinder, a pump.
Minimum required materials and consumables or equivalent	Cement, aggregates, water, sand, bricks, adhesives, sand paper, brackets, bolts and nuts, thread tape, solvent cement, boss white, yarn, wall plugs, screws, clips, electricity, hand files, pipes and fittings, Nails and timber,
Special notes	

Code	UE/PL/M4.4
Module title	**M4.4: Maintain water piping systems, appliances and fittings**
Related Qualification	Part of Uganda Vocational Qualification (DOMESTIC PLUMBERUVQ1)
Qualification Level	1
Module purpose	After completion of this module, a trainee will be able to maintain water piping systems, appliances and fittings
Learning-Working Assignments (LWAs)	**LWA 4/1: Service taps, valves and corks** **LWA 4/2: Repair/replace sanitary appliances and accessories** **LWA 4/3: Repair leakages** **LWA 4/4: Maintain gutters and down pipes** **LWA 4/5: Maintain drainage and sewerage network** **LWA 4/6: Service tools and equipment** ***Note:*** *3. The learning exercises may be repeated till the Trainee acquires targeted competence;* 4. *The Trainer is advised to deliver relevant theoretical instruction with demonstrations as required to perform each learning working assignment.*
Related Practical Exercises (PEXs)	**LWA4/1: Service taps, valves and corks** PEX 1.1: Assess taps, valves, and corks PEX 1.2: Disconnect water system PEX 1.3: Identify fault PEX 1.4: Select materials, tools and equipment PEX 1.5: Rectify fault PEX 1.6: Reconnect water system PEX 1.7: Test performance
	LWA4/2: Repair/replace Sanitary appliances and accessories PEX 2.1: Assess sanitary appliance and accessories PEX 2.2: Disconnect water system PEX 2.3: Identify fault PEX 2.4: Select materials, tools and equipment PEX 2.5: Rectify fault PEX 2.6: Reconnect water system PEX 2.7: Test performance
	LWA 4/3: Repair leakages PEX 3.1: Assess any leakage PEX 3.2: Disconnect water system PEX 3.3: Identify cause PEX 3.4: Select materials, tools and equipment PEX 3.5: Rectify fault PEX 3.6: Reconnect water system PEX 3.7: Test performance PEX3.8: perform periodic checks

	LWA4/4: Maintain gutters and down pipes PEX 4.1: Assess fault PEX 4.2: Identify cause PEX 4.3: Select materials, tools and equipment PEX 4.4: Rectify fault PEX 4.5: Test performance PEX 4.7: Perform periodic checks
	LWA 4/5: Maintain drainage and sewerage network PEX 5.1: Assess problem PEX 5.2: Control flow PEX 5.3: Identify cause PEX 5.4: Select materials, tools and equipment PEX 5.5: Rectify fault PEX 5.6: Release flow PEX 5.7: Test performance PEX 5.8: Perform periodic checks
	LAW4/6: Service Tools and Equipment PEX6.1: Lubricate equipment and tools PEX 6.2: Clean tools and equipment PEX6.3: Store tools and equipment PEX6.4: Carry out preventive maintenance periodically. PEX 6.5: Test performance
	LWA4/7: Perform Occupational Health, Safety and Environment Protection Practices PEX7.1: Wear protective gears PEX7.2: Display safety signs PEX7.3: Manage waste PEX7.4: Clean workplace PEX7.5: Clean tools and equipment PEX7.5: Maintain personal hygiene PEX7.5: Administer first aid PEX7.5: Perform fire fighting PEX7.6: Store tools, materials and equipment
Occupational health and safety	Practices, rules and regulations on occupational health, safety and environmental protection, included in the listed related knowledge should be Performed and demonstrated during LWAs and PEXs
Pre-requisite modules	None
Related knowledge/ theory	*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 recognized reference materials as appropriate:* • *Equipment and tools usage* • *Literacy and numeracy* • *Diagnostic skills*

	• *Operational procedures* • *Standards, Properties of materials* • *Safety precautions* • *Quotation* • *Electricity* • *Interpretation manuals of different tools* • *Usage of tools and equipment* • *Science of plumbing* • *Plumbing policies*
Average duration of learning	200hours (5 weeks) of nominal learning suggested to include; • 4 days for Occupational theory • 21days for Occupational practice
Suggestions on Organization of learning	The acquisition of competencies (skills, knowledge, attitudes) described in this module may take place at a training center or its equivalent provided all equipment and materials required for training are in place.
Assessment	Assessment to be conducted according to established regulations by recognized assessment body using related Practical and Written Test Items from Item bank
Minimum required tools/ equipment/ implements or equivalent	Allen key, spanners, hammer, wrench, hacksaw, tape measure, plier, screw drivers, chisel, grinder, a compressor, Bucket
Minimum required materials and consumables or equivalent	oil/ Lubricants, water, cotton waste, soap or detergents ,cement, bricks
Special note	

Code	**UE/P/M1.5**
Module title	**M1.5: Harvest rain water from the roof**
Related Qualification	Part of: Uganda Vocational Qualification (PLUMBER UVQ1)
Qualification Level	1
Module purpose	By the end of this module, the trainee will be able to Harvest rain water from the roof
Learning-Working Assignments (LWAs)	**LWA 5/1: Make gutters** **LWA 5/2: Fix gutters** **LWA 5/3: Make down Pipes and fittings** **LWA 5/4: Construct tank base, mount tank and fit fixtures** **LWA 5/5: Perform Occupational Health, Safety and Environment Protection Practices** ***Note:*** 1. *The learning exercises may be repeated till 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)	**LWA5/1: Make gutters** PEX 1.1: Interpret working drawing PEX 1.2: Sort out tools, equipment and materials PEX 1.3: Measure and mark PEX 1.4: Cut and notch PEX 1.5: Fold to shape PEX 1.6: Join gutter PEX 1.7: Test leakage PEX 1.8**:** Perform finishing
	LWA5/2: Fix gutters PEX 2.1: Clear site PEX 2.2: Interpret drawings PEX 2.3: Select, tools and equipment PEX 2.4: Determine gradient PEX 2.5: Measure and mark PEX 2.6: Fix brackets PEX 2.7: Insert gutters PEX 2.8: Test leakage, flow and firmness PEX 2.9**:** Perform finishing
	LWA5/3: Make down Pipes and fittings PEX 3.1: Clear site PEX 3.2: Interpret drawings PEX 3.3: Select, tools and equipment PEX 3.4: Determine plumpness PEX 3.5: Measure and mark PEX 3.6: Cut and notch PEX 3.7: Roll work piece PEX 3.8: Join work piece PEX 3.9: Test performance PEX 3.10**:** Perform finishing

	LWA5/4: Construct tank base, mount tank and fit fixtures PEX 4.1: Clear site PEX 4.2**:** Interpret drawings PEX 4.3: Select materials, tools and equipment PEX 4.4: Measure and mark PEX 4.5: Build base PEX 4.6: Mount tank and fit fixtures PEX 4.7: Test performance PEX 4.8**:** Perform finishing
	LWA5/5: Perform Occupational Health, Safety and Environment Protection Practices PEX5.1: Wear protective gears PEX5.2: Display safety signs PEX5.3: Manage waste PEX5.4: Clean workplace PEX5.5: Clean tools and equipment PEX5.6: Maintain personal hygiene PEX5.7: Administer first aid PEX5.8: Perform fire fighting PEX5.9: Store tools, materials and equipment PEX5.10: Lubricate tools and equipment
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	*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:* • Properties of materials • Construction materials • Measurements • Technical drawing • Plumbing science • Safety precautions • Mathematics • Quotation • Soil Properties • Mortar setting • Levelness and plumpness • Building construction
Average duration of learning	200hours (5weeks) of nominal learning suggested to include; • *4 days of occupational theory and* • *21 days of occupational practice*
Suggestions on organization of learning	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.

Assessment	Assessment to be conducted according to established regulations by recognised assessment body using related practical and written test items from Item bank
Minimum required tools/ equipment/ implements or equivalent	Wheel barrow, hoe, spade, ranging line, screw drivers, grooving machine, drill, , hack saw, ladders, buckets Tape measure, pair of snips, straight edge, hammer, screw driver, riveting gun, soldering gun, marker, file, chisel, grinding machine, wire brush, drilling machine, try square, spirit level, grooving machine, shearing machine, rolling machine, bending machine, mallet, stakes, gas welding equipment, arc welding machine, pliers, dividers, pair of compasses, calipers, spanners
Minimum required materials and consumables or equivalent	Cement, aggregate, galvanised sheets, sand, wire mesh, timber, bricks, dump proof membrane, flux, Salamonie, Rivets, screws, jointing compounds, brackets, ropes, water, hack saw blades, drill bits, sealant, electrodes, solder, gutters, pipes, storage vessel, screws and plugs, rivets
Special notes	

3.0 ATP- PART III
Assessment Instruments for Plumber

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 reviewed 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 plumber are included.

Overview of Test Item Samples Included

No.	Type of Test Item	Numbers included
1	Written (Theory)- Short Answer	02
2.	Written (Theory)- Multiple Choice	01
3.	Written (Theory)- Matching item- (Generic)	01
4.	Written (Theory)-Matching item (Cause Effect)	01
5.	Written (Theory)- Matching item (Work sequence)	01
6.	Performance (Practical) Test Items	01
	Total	7

WRITTEN TEST ITEMS (SAMPLES)

DIT/ QS	Test Item Database Written (Theory) Test Item- No. 1
Occupational Title:	PLUMBER
Competence level:	1
Code no.	
Test Item type:	Short answer: √ Multiple choice: Matching item: Generic / Cause- Effect / Work-sequence
Complexity level:	C1
Date of OP:	January, 2022
Related module:	M2.5
Time allocation:	3 minutes

Test Item	What is a trap in relation to plumbing?
Answer spaces	……..
Expected key (answers)	A trap is a U- shaped fitting meant to retain a certain amount of water called water seal to prevent foul air from the drainage system to enter the building.

<table>
<tr><td>DIT/ QS</td><td colspan="4">Test Item Database
Written (Theory) Test Item- no. 2</td></tr>
<tr><td>Occupational Title:</td><td colspan="4">Plumber</td></tr>
<tr><td>Competence level:</td><td colspan="4">1</td></tr>
<tr><td>Code no.</td><td colspan="4"></td></tr>
<tr><td>Test Item type:</td><td colspan="4"><table>
<tr><td>Short answer</td><td colspan="3">√</td></tr>
<tr><td>Multiple choice</td><td colspan="3"></td></tr>
<tr><td rowspan="2">Matching item</td><td>Generic</td><td>Cause- Effect</td><td>Work-sequence</td></tr>
<tr><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Complexity level:</td><td colspan="4">C2</td></tr>
<tr><td>Date of OP:</td><td colspan="4">October 2021</td></tr>
<tr><td>Related module:</td><td colspan="4">M1.1</td></tr>
<tr><td>Time allocation:</td><td colspan="4">3 minutes</td></tr>
</table>

Test Item	State two types of materials used in manufacturing the drainage pipes
Answer spaces	1. …… 2. ……
Key (answer)	1. PVC 2. Steel 3. Pitch fibre 4. Cast iron 5. Asbestos 6. Copper 7. Galvanised iron 8. HDPE

DIT/ QS	Test Item Database Written (Theory) Test Item- No. 3			
Occupational Title:	Plumber			
Competence level:	1			
Code no.				
Test Item type:	Short answer			
	Multiple choice	√		
	Matching item	Generic	Cause- Effect	Work-sequence
Complexity level:	C2			
Date of OP:	January, 2022			
Related module:	M2.3			
Time allocation:	2 minutes			

Test Item	A pipe that lies between the boundary stock cork and water mains is called.....pipe.
Answer spaces	a) Distribution b) Supply c) Communication d) Suction

Key (answer)	C

DIT/ QS	Test Item Database Written (Theory) Test Item- No. 4
Occupational Title:	PLUMBER
Competence level	1
Code no.	
Test Item type:	Short answer Multiple choice Matching item — Generic √ / Cause- Effect / Work-sequence
Complexity level:	C2
Date of OP:	January, 2022
Related module:	M1.5
Time allocation:	5 minutes

Test item	Match the following tools to their functions.

Column A (tools)	
1.	Stock and die
2.	Hacksaw
3.	Snips
4.	Vice

Column B (functions)	
A	Cutting thin sheet metals
B	Gripping pipes
C	Cutting pipes
D	Drilling holes
E	Making external threads

Key (answer)	1:E,2:C,3:A,4:B

DIT/ QS	Test Item Database Written (Theory) Test Item- no. 5
Occupational Title:	Plumber
Competence level:	1
Code no.	
Test Item type:	Short answer:
	Multiple choice:
	Matching item: Generic: ; Cause- Effect: √ ; Work-sequence:
Complexity level:	C2
Date of OP:	January 2022
Related module:	M1.1
Time allocation:	3mins

Test item	Match the following defects of trap seal losses to their causes

Column A (defects)	
1.	Compression
2.	Capillarity
3.	Induced siphonage
4.	Self siphonage

Column B (causes)	
A	Heavy discharge passing the branch
B	Steep fall
C	Water supply
D	Sharp bend
E	Absorbent material stuck in the trap

Key (answer)	1:D, 2:E,3:A,4:B

DIT/ QS	Test Item Database Written (Theory) Test Item- no. 5
Occupational Title:	Plumber
Competence level:	1
Code no.	
Test Item type:	Short answer Multiple choice Matching item: Generic / Cause- Effect (√) / Work-sequence
Complexity level:	C2
Date of OP:	January 2022
Related module:	M1.1
Time allocation:	3mins

Test item	Match the following defects of trap seal losses to their causes

Column A (defects)	
1.	Compression
2.	Capillarity
3.	Induced siphonage
4.	Self siphonage

Column B (causes)	
A	Heavy discharge passing the branch
B	Steep fall
C	Water supply
D	Sharp bend
E	Absorbent material stuck in the trap

Key (answer)	1:D, 2:E,3:A,4:B

DIT/ QS	Test Item Database Written (Theory) Test Item- No. 6			
Occupational Title:	Plumber			
Competence level:	1			
Code no.				
Test Item type:	Short answer			
	Multiple choice			
	Matching item	Generic	Cause- Effect	Work-sequence
				√
Complexity level:	C2			
Date of OP:	January, 2022			
Related modules:	M2.4			
Time allocation:	5 minutes			

Test Item	Arrange the process of cutting a 25 mm GI pipe using a hack saw.

Column A (chronology)	**Column B (work steps) in wrong chronology order**	
1.	A	Remove the pipe from the vice
2.	B	Perform reaming
3.	C	Clean area
4.	D	Check dimension
5.	E	Measure and mark the pipe
6.	F	Fix the pipe in the pipe vice
7.	G	Cut the GI pipe
8.	H	Arrange tools and equipment
Key (answer)	1:H, 2:E,3:F,4:G, 5:B ,6:A ,7:D, 8:C	

PERFORMANCE TEST ITEMS (samples)

DIT/ QS	Test Item Database Performance Test Item No.
Occupational Title:	PLUMBER
Competence level:	Level 1
Code no.	
Test Item:	Install a wash hand basin on a plastered wall to discharge the contents outside into a gulley trap and supply it with cold water
Complexity level:	P2
Date of OP:	January 2022
Related module:	M1.1
Related skills and knowledge:	Literacy, Numeracy, Standard operational procedures, occupational health, safety and environmental protection practices, interpretation of drawings, fixing heights, related falls/gradient, chasing walls, supporting methods, jointing compounds, usage of tools and equipment.
Required tools, Materials and Equipment:	Drill, tape measure, hacksaw, pipe wrench, adjustable spanner, screw driver, hammer, pipe cutter, jointing compound
Time allocation:	6 hours
Preferred venue:	
Remarks for candidates	• Candidates should be in possession of the necessary personal protective equipment • Provide a helper to the candidates
Remarks for assessors	Provide candidates with all required resources

#	Assessment criteria	Scoring guide	Max. Score	
			Process	Result
1	Preparation for the task	Wore personal protective gear namely;		
		Overall		1
		Safety shoes		1
		Head gear		1
		Gloves		1
		Surveyed area; Prepared work area		2
		Assembled tools and materials (i.e. Drill, tape measure, hacksaw, pipe wrench, adjustable spanner, screw driver, hammer, pipe cutter, reamer, chisel, spirit level, marker, trowel, spade, wheel barrow, hoe, wall brackets, screws, solvent cement, wash hand basin, flexible tube, angle valve, pillar tap, bottle trap, waste pipes, fittings)		2
2	Installation of Wash Hand Basin	Marked out fixing height (812mm ± 2mm}	1	1
		Chased walls	2	1
		Drilled out holes for bolts		1
		Tried out wash hand basin		1
		Made holes for outlet	3	1
		Measure and cut piped to dimension	2	2
		Joined pipes	2	2
		Supported pipes	2	2
		Wall brackets fixed		2
		Bottle trap fixed	3	1
		Wash hand basin mounted		2
		Tested level and firmness	2	2
4	Fixing of waste pipes	Waste pipes measured and cut to dimensions		
		400mm long for100mm diameter		1
		500mm long for 32mm diameter pipe		1
		300mm long for 32mm diameter pipe		1
		Over seal drain cut at 45^{o}		2
		Clipped waste pipe		2
		Access tee fitted		2
		Bends fitted		2
		Drain pipe laid		2
		Gulley trap fitted		2
		Fixed waste pipe	2	1
		Fitted cold water tap		2
#	Assessment criteria	Scoring guide	Max. Score	

			Process	Result
5	Testing system performance	Connected flexible tube and angle valves to the tap		2
		Blocked outlet of the waste pipe		2
		Opened tap momentarily		1
		No leakages observed at the bottom of the wash hand basin, bottle trap, pitcher, tee tap and angle valve		2
6	Performed finishing	Workshop cleaned		1
		Tools collected, cleaned		1
		Wash hand basin cleaned		1
		Tools stored		1
	TOTAL	**(X/Y) x 100**	21	57
			75	

4.0 ATP- PART IV
INFORMATION ON REVIEWED PROCESS

4.1 Occupational Profile Development (January 2022)

The assessment and Training Package was exclusively developed by job practitioners who were working in the occupation of a **plumber.**

The job expert panel, guided by UVQF facilitators developed the Occupational Profile that mirrors duties and tasks performed in the world of work and also provided additional generic information regarding the occupation.

4.2 Training Modules Development (January 2022)

Based on the Occupational Profile for plumber of **January 2022**, Training Modules were developed by job practitioners, guided by UVQF Facilitators.

4.3 Test Item Development (January 2022)

Based on the Occupational Profile for plumber of **January 2022**, and Training Modules, Test Items 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 review 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 instructors and job practitioners' panels consolidated the development philosophy.

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

4.5 Developing Panel

The participating panel of Job Practitioners required for different stages of the assessment training package i.e., occupational profile, training modules, assessment instruments were constituted by members from the following organizations;

No.	Name	Institution/ Organization
1.	Mr kavuma Abu baker	NCDC
2.	Mr Ntaro Robert	Senior examiner
3.	Mr Kayongo Micheal	UNEB Representative
4.	Mr Simbwa Ronald	Kisubi vocational institute
5.	Mr Tubugwisa Yonnah	Ntinda vocational institute
6.	Mr Pinyiteki John	Sun power sustained energy
7.	Mr Nkwanga David	Nakawa vocational institute
8.	Mr Iranya Christopher	Uganda Police Force
9.	Mr Bukenya Jonathan	Davis and shirtliff
10.	Mr Rukundo Emmanuel	Emmanuel Technical services

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, DIT
2. **Facilitators (Occupational Profile Development) –**Ms Kyatuhire Fortunate, Ms Nabirye Asha.
3. **Facilitators (Training Modules Development) -** Ms Kyatuhire Fortunate. Ms Nabirye Asha
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4.7 Reference time:

The Assessment and Training Package was compiled in August 2020 and may be periodically revised to match the dynamic trends in the occupation and hence issued in different versions:

References

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