THE REPUBLIC OF UGANDA
Ministry of Education and Sports

Business, Technical, Vocational Education and Training [BTVET] Sub sector Reform

Assessment and Training Package

For

Motor Vehicle Mechanic

Qualification Level: 1
Occupational Cluster: Physics, Technology and Design

January 2022

Developed by:

Qualifications Standards Department
Directorate Of Industrial Training

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 falls 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 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.
(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.

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Word from Permanent Secretary

The Ministry of Education and Sports (MoES) through the Directorate of Industrial Training conducts Competence Based Assessment.

The foreseen advantages of CBA include improved access, equity and relevance of skills development, 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.

To achieve the set-out targets, the Directorate embarked on the anticipated UVQF design and development piloting its instruments and mechanisms in order to effectively enhance Competence-Based Assessment (CBA) 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 **MOTOR VEHICLE MECHANIC – QUALIFICATION LEVEL 1**.

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 MOTOR VEHICLE MECHANIC. This Occupational Profile, which was developed by mechanics practicing in the world of work mirrors the duties, and tasks that mechanics are expected to perform.

0.2. PART II: "Training Modules" in the form of guidelines to train **MOTOR VEHICLE MECHANIC** 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 **MOTOR VEHICLE MECHANIC**. These assessment-based instruments were developed by Job practitioners (mechanics) 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 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. Modular 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).

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

i Part 1: Occupational Profile: ***January 2022***
ii Part 2: Training Modules: ***January 2022***
iii Part 3: Assessment Instruments: ***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 DIT

Acknowledgement

The Qualifications Standards Department of DIT wishes to sincerely acknowledge the valuable contributions to the development 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;
- Instructors in various vocational institutions;
- 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 & Certification
ATP	Assessment & Training Packages
BTVET	Business, Technical and Vocational Education and Training
CBA	Competence Based Assessment
CBET	Competency Based Education and Training
DACUM	Develop a Curriculum
DIT	Directorate of Industrial Training
ITC	Industrial Training Council
GoU	Government of Uganda
LWA	Learning-working Assignment
MC	Modular 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
TVET	Technical and Vocational Education and Training
UVQ	Uganda Vocational Qualification
UVQF	Uganda Vocational Qualifications Framework
WTI	Written (Theory) Test Item

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	Integration of skills, knowledge, attitudes, attributes and expertise in doing/ performing tasks in the world of work to a set standard.
Competency	(Occupational) competency is understood as the ability to perform tasks common to an occupation to a set standard.
CBET	Competence-based education and training means that programmes: 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 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.
Modules	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)	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/behaviour, tools, materials and equipment required to perform as well as trends/ concerns in the occupation. Occupational profiles are the reference points for developing modular curricular and assessment standards
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. *(see also: Duty)*

1.0 ATP-PART I
Occupational Profile for MOTOR VEHICLE MECHANIC

1.1 The OCCUPATIONAL PROFILE (OP) for "**MOTOR VEHICLE MECHANIC**" below defines the ***Duties*** and ***Tasks*** a competent **MOTOR VEHICLE MECHANIC** 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, 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 panellists 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.

1.4 The panellists, facilitators and coordinators who participated in developing this Occupational Profile for **MOTOR VEHICLE MECHANIC** are listed on the following page.

[1] The DACUM-method was used. DACUM is an acronym for 'Develop A Curriculum'

Expert Panel

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Funded by
Government of Uganda

THE REPUBLIC OF UGANDA
Ministry of Education and Sports

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

Occupational Profile

For a

"MOTOR VEHICLE MECHANIC"

Reviewed by: Directorate of Industrial Training (Qualifications Standards)

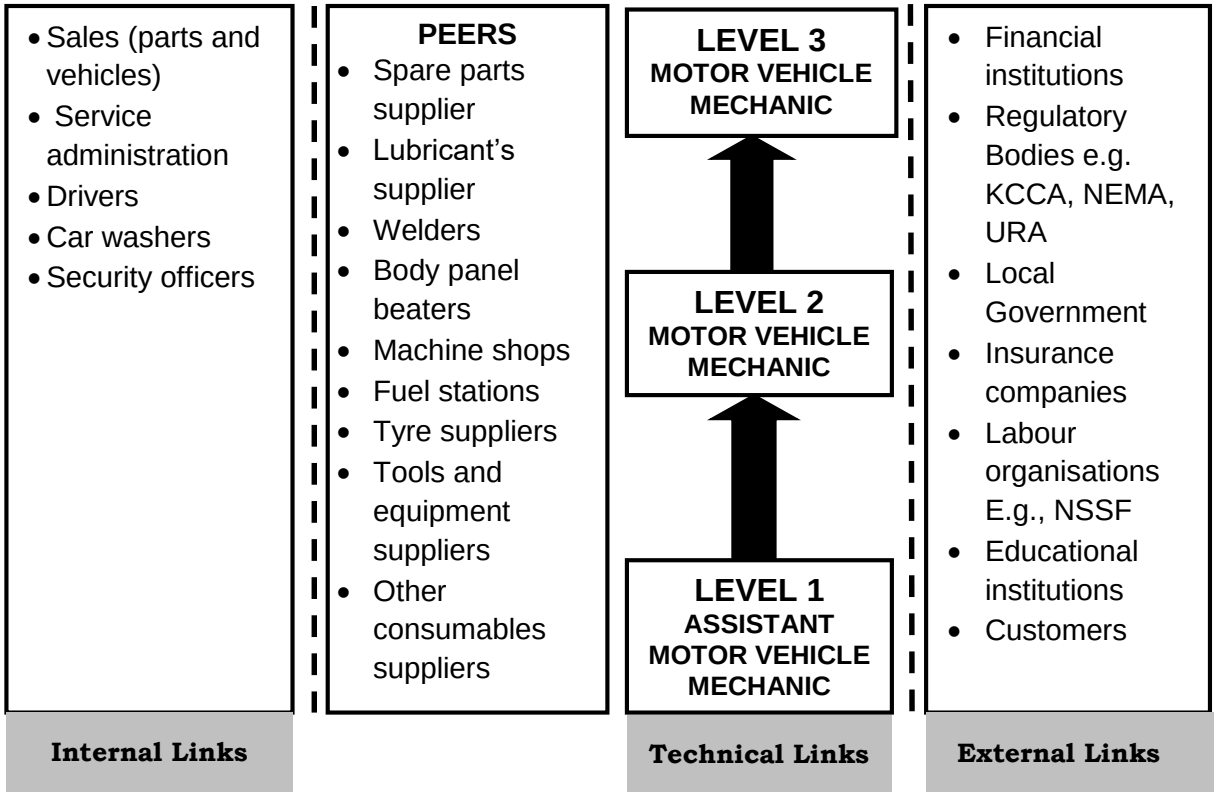
03rd - 07th January 2022

NOMENCLATURE FOR THE OCCUPATION OF A MOTOR VEHICLE MECHANIC

Definition of a motor vehicle mechanic:

This is a person who is able to carry out light vehicle repair, maintenance and inspection.

JOB ORGANISATION CHART FOR A MOTOR VEHICLE MECHANIC



Descriptions for the levels in the occupation of a 'Motor Vehicle mechanic'

1. **A Level I motor vehicle mechanic** is a person who can do minor repair and routine light vehicle maintenance and inspection
2. **A level II Motor Vehicle mechanic is** a person who can do vehicle frequent service jobs and basic components overhaul
3. **A Level III Motor Vehicle Mechanic** is a person who can do vehicle diagnosis, trouble shooting and major component overhaul.

DUTIES AND TASKS

A. SERVICE ENGINE	**A1.** Service engine cooling system	**A2.** Change engine oil	**A3.** Service ignition system
	A4. Maintain air induction system	**A5.** Maintain exhaust system	**A6.** Service the fuel supply system

B. SERVICE TRANSMISSION SYSTEM	**B1.** Service clutch system	**B2.** Maintain transfer gear box	**B3.** Maintain proper shaft
	B4. Change differential oils	**B5.** Check differential oil levels	**B6.** Inspect differential for oil leak
	B7. Inspect drive shaft boots	**B8.** Top up with oils	**B9.** Lubricate universal joints
	B10. Inspect drive shaft for oil leaks	**B11.** Check the clutch fluid level	**B12.** Adjust clutch pedal play
	B13. Inspect clutch fluid lines	**B14.** Change gear box oil	**B15.** Service final drive

C. REPAIR BRAKE SYSTEM	**C1.** Adjust brake free play	**C2.** Adjust parking brake	**C3.** Inspect front brake pads and lines
	C4. Inspect rear brake shoes	**C5.** Inspect brake disks and drums	**C6.** Replace front brake pads
	C7. Inspect brake fluid level	**C8.** Inspect brake fluid lines	**C9.** Replace brake fluid

D. SERVICE WHEELS AND TYRES	**D1.** Adjust wheel bearing pre-load of the front wheels	**D2.** Check wheel nuts for tightness	**D3.** Adjust tyre pressure
	D4. Inspect tyres for wear and tear	**D5.** Perform tyre rotation	**D6.** Clean, inspect, and repack front rubber boots
	D7. Clean, inspect and repack front wheel bearings		

E. MAINTAIN SUSPENSION SYSTEM	**E1.** Inspect suspension system	**E2.** Identify repair tools	**E3.** Replace bushes
	E4. Replace centre balls	**E5.** Maintain tyres	**E6.** Inspect shock absorbers for leakage
	E7. Inspect shock absorber bushes	**E8.** Inspect suspension ball joint for wear	**E9.** Inspect leaf springs for breakage
	E10. Tighten suspension bolts	**E11.** Lubricate suspension joints	**E12.** Inspect cell springs for breakages

F. SERVICE THE STEERING SYSTEM	**F1.** Check steering free play	**F2.** Check steering pump noise	**F3.** Check steering linkages for looseness, bending and damages
	F4. Inspect the ball joints for free play	**F5.** Check tie rod ends for looseness	**F6.** Check horse pipes and pipelines and rubber boots
	F7. Check for leakages		

G. MAINTAIN WORKSHOP TOOLS AND EQUIPMENT	**G1.** Clean tools	**G2.** Arrange tools	**G3.** Audit tools
	G4. Maintain guards on grinders	**G5.** Inspect workshop compressed air system for leakage	**G6.** inspect hydraulic press for leakage
	G7. Top up oil levels in hydraulic jacks	**G8.** Check operation lifts	**G9.** Inspect stands for damage and crack

H. VISUAL CONDUCT INSPECTION OF VEHICLES	**H1.** Inspect tyres	**H2.** Inspect Engine Mountings	**H3.** Inspect exhaust system
	H4. Inspect Air conditioning system	**H5.** Inspect Wiper System	**H6.** Inspect Lights
	H7. Inspect car body	**H8.** Check for Leakages	**H9.** Inspect Suspension bushes
	H10. Inspect Drive Belts	**H11.** Inspect battery	**H12.** Inspect oil and other fluids levels

I. PERFORM OCCUPATIONAL HEALTH SAFETY & ENVIRONMENTAL PROTECTION PRACTICES	**I1.** Observe safety precautions	**I2.** Maintain personal health and hygiene	**I3.** Clean workshop
	I4. Maintain workshop tools	**I5.** Use fire extinguishers	**I6.** Perform first aid
	I7. Observe security precautions	**I8.** Manage waste	

Additional Information

Generic Knowledge & Skills

1. Fundamentals of Automotive technology
2. Communication skills
3. Customer care
4. Planning
5. ICT
6. Entrepreneurship skills
7. Environment, health and safety
8. First Aid
9. Manual Handling
10. Record keeping
11. Selection of service parts
12. Interpretation of motor vehicle workshop manuals
13. Housekeeping i.e., the 5S Workshop processes
14. Selection of appropriate tools and equipment
15. Types of lubricants applied in motor vehicle workshop manuals
16. Knowledge of emissions
17. Knowledge of motor vehicle power transmission systems
18. Principles of motion
19. Principles of mathematics
20. Interpretation of engineering drawings
21. Dismantling and assembling skills of motor vehicle components

Tools, Materials and Equipment

1. Insulators and adhesive
2. Soldering wire
3. Axil stand
4. Engine stand
5. Spanners
6. Screw driver
7. Transmission jack
8. Pliers
9. Pipe wrench
10. Toolbox
11. Chisels
12. Torch light
13. Scrappers
14. Allen keys
15. Jumps and stands
16. Pullers
17. Hammers
18. Air compressor
19. Cotton waste
20. Oil disposal drums
21. Oil drain can
22. Fire extinguisher
23. First aid box
24. Special light
25. Bench vice
26. Jumper cables
27. Wedge stoppers
28. Crane
29. Taps and dies
30. Battery charger
31. Gloves
32. Grinding machine
33. Drilling machine
34. Safety boots
35. Multimeters
36. Soldering gun

Attitudes/ Traits/ Behaviour 1. Time conscious 2. Trustworthy 3. Hardworking 4. Team player 5. Honest 6. Innovative 7. Ethical 8. Analytical 9. Resilient 10. Ambitious 11. Organised 12. Clean 13. Disciplined 14. Smart 15. Respectful 16. Good communicator 17. Approachable 18. Flexible 19. Reliable 20. Patient 21. Attentive 22. Foreseer/visionary	**Future Trends & Concerns** 1. Financial accountability 2. Quality service delivery 3. Computer literacy 4. Form associations for motor vehicle mechanics 5. Use of internet 6. Media sensitization 7. Application of electronics in motor vehicle technology 8. Improve communication facilities in workplaces

2.0 ATP – PART II

Training Modules for MOTOR VEHICLE MECHANIC

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 modular format of the curriculum allows learners of MOTOR VEHICLE MECHANIC 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 centers, as well as companies can accommodate more students in a given period of time.

2.3 The modules were developed jointly by both instructors 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.

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 an 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, at the workplace; or a combination of both.

WHO IS A MOTOR VEHICLE MECHANIC QUALIFICATION LEVEL 1?

A level 1 MOTOR VEHICLE MECHANIC is a person who can do minor repair and routine light vehicle maintenance and inspection

OVERVIEW OF MODULES FOR A MOTOR VEHICLE MECHANIC UVQ LEVEL 1

Code	Module Title	Average duration	
		Contact hours	Weeks
UE/MVM/M1.1	Service engine	160	4
UE/MVM/M1.2	Maintain brakes	120	3
UE/MVM/M1.3	Service transmission system	120	3
UE/MVM/M1.4	Maintain suspension system	200	5
UE/MVM/M1.5	Service steering system	120	3
UE/MVM/M1.6	Service electrical system	80	2
Summary	Modules	640 hours	16 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 leaner 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 recognised 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 3 of this ATP for **MOTOR VEHICLE MECHANIC**.

Code	UE/MVM/M1.1
Module title	**M1.1: Service Engine**
Related Qualification	Part of: Uganda Vocational Qualification (MOTOR VEHICLE MECHANIC UVQ2)
Qualification Level	1
Module purpose	By the end of the of this module, the trainee will be able to do periodic maintenance of the engine in the vehicle
Learning-Working Assignments (LWAs)	**LWA1/1: Change engine oil** **LWA1/2: Inspect the cooling system** **LWA1/3: Service drive belts** **LWA1/4: Service air cleaner** **LWA1/5: Service spark plugs** **LWA1/6: service battery** **LWA1/7: Service fuel tank cap** **LWA1/8: Service fuel filter** **LWA1/9: Service PCV valve** **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)	**LWA1/1: Change engine oil** PEX 1.1: Change oil filter PEX 1.2: Top up oil PEX 1.3: Check oil level
	LWA1/2: Inspect cooling system PEX 2.1: Check for leakage and cracks PEX 2.2: Check coolant level PEX 2.3: Inspect radiator cap PEX 2.4: Pressure test radiator cap PEX 2.5: Replace coolant PEX 2.6: Check the expansion tank

	LWA1/3: Service drive belts PEX 3.1: Inspect Drive belts PEX 3.2: Adjust drive belts PEX 3.3: Replace drive belts
	LWA1/4: Service Air cleaner PEX 4.1: Remove the air cleaner PEX 4.2: Inspect air cleaner element PEX 4.3: Clean air cleaner element PEX 4.4: Replace/install air cleaner
	LWA1/5: Service spark plugs PEX 5.1: Remove spark plugs PEX 5.2: Inspect spark plugs PEX 5.3: Adjust gaps PEX 5.4: Adjust gaps
	LWA1/6: service battery PEX 6.1: Check plates PEX 6.2: Check terminal voltage PEX 6.3: Check electrolyte level PEX 6.4: Top up battery electrolyte PEX 6.5: Check specific gravity PEX 6.6: Change battery
	LWA1/7: Service fuel tank cap PEX 7.1: Check gasket PEX 7.2: Change gasket PEX 7.3: Change fuel tank cap
	LWA1/8: Service fuel filter PEX 8.1: Clean sedimenter PEX 8.2: Change fuel filter
	LWA1/9: Service PCV Value PEX 9.1: Inspect PCV PEX 9.2: Change PCV PEX 9.3: Inspect charcoal canister
Occupational health and safety	Precautions, rules and regulations on occupational health, safety and environmental protection, included in the related knowledge listings as well as in test items 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:* • Automotive fundamentals
Average duration of learning	160 hours (20 days) of nominal learning suggested to include: • 5 days of occupational theory and 15 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	spark plug spanners, spanners, oil filter belt, tyre leaver
Minimum required materials and consumables or equivalent	cotton waste, engine oil, drive belt, spark plug, silicon, fuel filter, oil filter, coolant
Special notes	The theory must be integrated into the practice during delivery.

Code	UE/MVM/M1.2
Module title	**M1.2: Service Vehicle Braking System**
Related Qualification	Part of Uganda Vocational Qualification (MOTOR VEHICLE MECHANIC UVQ1)
Qualification Level	1
Module purpose	After completion of this module, the trainee will be able to service vehicle braking systems.
Learning-Working Assignments (LWAs)	**LWA 2/1: Repair drum brakes** **LWA 2/2: Repair disc-brake** **LWA 2/3: Inspect brake hydraulic system** **LWA 2/4: Bleed the hydraulic system** **LWA 2/5: Perform occupational health, safety & 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)	**LWA 2/1: Repair drum brakes** PEX 1.1: Remove wheel PEX 1.2: Remove drum PEX 1.3: Inspect drum PEX 1.4: Replace brake shoes PEX 1.5: Adjust parking brake PEX 1.6: Fix back the wheel
	LWA 2/2: Repair disc-brake PEX 2.1: Remove wheel PEX 2.2: Inspect disc PEX 2.3: Inspect pads PEX 2.4: Replace brake pads PEX 2.5: Fix back the wheel

	LWA 2/3: Service the hydraulic system PEX 3.1: Inspect the hydraulic system components PEX 3.2: Bleed the hydraulic system
	LWA 2/4: Perform occupational health, safety & environmental protection practices PEX 4.1: Wear PPE PEX 4.2: Administer First aid PEX 4.3: Perform firefighting mock drill PEX 4.4: Manage waste PEX 4.5: Display safety signs PEX 4.6: Maintain workshop hygiene
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 recognized reference materials as appropriate:* • Principles of operation of a hydraulic, pneumatic and mechanical braking system • Methods of bleeding hydraulic brake systems • Health and safety precautions in servicing the brake system • Properties of brake fluid • Properties of materials for manufacturing brake pads, brake shoes, drums and discs • Calculations of pressure at different points along the brake mechanisms • Causes of different brake system faults

Average duration of learning	120 hours (15 days) of nominal learning suggested to include: • 3 days of occupational theory and • 12 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 recognized assessment body using related Practical and Written Test Items from Item bank.
Minimum required tools/ equipment/ implements or equivalent	Brake bleeder, brake pipe spanner, pressure gauges, tool box (nipple spanner, pliers, screw driver), brake service kit, pipe flaring kit
Minimum required materials and consumables or equivalent	fuel, cotton waste, water, brake fluid
Special notes	

Code	UE/MVM/M1.3
Module title	**M1.3: Service vehicle Transmission system**
Related Qualification	Part of Uganda Vocational Qualification (VEHICLE MECHANIC UVQ1)
Qualification Level	1
Module purpose	After completion of this module, the trainee will be able to service and maintain vehicle transmission system.
Learning-Working Assignments (LWAs)	**LWA 3/1: Service the vehicle clutch** **LWA 3/2: Service the vehicle Gear box** **LWA 3/3: Service Propeller shaft** **LWA 3/4: Service vehicle front wheel drive shafts** **LWA 3/5: Service rear wheel drive shaft** **LWA 3/6: Service Differential unit** **LWA 3/7: Perform Occupational Health, Safety & 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)	**LWA 3/1: Service the vehicle clutch** PEX 1.1: Inspect clutch components (pedal, master cylinder, slave cylinder) PEX 1.2: Adjust clutch pedal free play PEX 1.3: Inspect for leakages and looseness PEX 1.4: Carry out Clutch bleeding
	LWA 3/2: Service the vehicle Gear box PEX 2.1: Inspect gear box mountings PEX 2.2: Inspect gear box for leakages PEX 2.3: Carry out gear box oil change PEX 2.4: Check gear box oil level

	LWA 3/3: Service vehicle propeller shaft assembly PEX 3.1: Inspect propeller shaft (looseness of bolts, wear and bends) PEX 3.2: Check sliding joints PEX 3.3: Check universal joint wear PEX 3.4: Lubricate the universal joints
	LWA 3/4: Service vehicle front wheel drive (FWD) shafts PEX 4.1: Inspect the rubber boots PEX 4.2: Inspect the CV joints
	LWA 3/5: Service Differential unit PEX 5.1: Inspect unit for leakages PEX 5.2: Replace gear oil PEX 5.3: Inspect differential oil level
	LWA 3/6: Perform Occupational Health, Safety & Environmental Protection Practices PEX 6.1: Wear PPE PEX 6.2: Administer First aid PEX 6.3: Perform fire fighting PEX 6.4: Manage waste PEX 6.5: Display safety signs
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: • Safety and health precautions • Principles of operating a transmission system • Signs of damage before opening the system • Types of lubricants used for manual and auto cars • Common problems of a transmission system • General procedures for servicing a transmission system
Average duration of learning	130 hours (16 days) of nominal learning suggested to include: • 4 days of occupational theory and • 12 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 recognized assessment body using related Practical and Written Test Items from Item bank.
Minimum required tools/ equipment/ implements or equivalent	Transmission Jack, spanners, ply bar, circlip plier, Engineer's plier, screw driver, stands, wheel chocks/wedges, oil pumps
Minimum required materials and consumables or equivalent	Transmission oils, oil seals, grease, cotton waste, service tags, drain containers, stationary, water, detergent, sealant, sawdust
Special notes	

Code	UE/MVM/M1.4
Module title	**M1.4: Maintain a suspension system**
Related Qualification	Part of Uganda Vocational Qualification (MOTOR VEHICLE MECHANIC UVQ1)
Qualification Level	1
Module purpose	After completion of this module, the trainee will be able to service and maintain a vehicle suspension system.
Learning-Working Assignments (LWAs)	**LWA 4/1: Service Coil springs** **LWA 4/2: Service leaf springs** **LWA 4/3: Service telescopic dampers** **LWA 4/4: Service ball joints** **LWA 4/5: Service Z-links** **LWA 4/6: Perform Occupational Health, Safety & 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)	**LWA 4/1: Service Coil springs** PEX 1.1: Inspect coil springs for damage PEX 1.2: Inspect bumping rubber for damage PEX 1.3: Measure oscillation
	LWA 4/2: Service leaf springs PEX 2.1: Inspect leaf springs for damages PEX 2.2: Inspect leaf spring bushes PEX 2.3: Service swinging shackle PEX 2.4: Service fixed shackle PEX 2.5: Lubricate leaf springs
	LWA 4/3: Service telescopic dampers PEX 3.1: Inspect Telescopic damper for damages PEX 3.2: Inspect telescopic damper bushes
	LWA 4/4: Maintain ball joints PEX 4.1: Inspect ball joint for wear PEX 4.2: Service ball joints PEX 4.3: Replace ball joints

	LWA 4/5: Maintain Z-Links PEX 5.1: Inspect Z-Links for damages PEX 5.2: Replace Z-link
	LWA 4/6: Perform Occupational Health, Safety & Environmental Protection Practices PEX 6.1: Wear PPE PEX 6.2: Administer First aid PEX 6.3: Perform a firefighting mock drill PEX 6.4: Manage waste PEX 6.5: Display safety signs
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*:* • Functions of a suspension system • Principles of operation of hydraulic mechanisms of the steering and suspension system • Types of shock absorbers • Operating principles of shock absorbers • Functions of shock absorbers • Operating principles of wheels and tyres • Properties of materials • Information and communication technology • Pascal's law • Technical drawing
Average duration of learning	200 hours (25 days) 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 recognized assessment body using related Practical and Written Test Items from Item bank.
Minimum required tools/ equipment/ implements or equivalent	Hydraulic jack, compressor, pressure gauge, stands, assorted spanners, torque wrench, press machine, hammer i.e., ball pane & rubber hammer, rubber boots
Minimum required materials and consumables or equivalent	Leaf springs, coil spring, ball joint, Z-links, shock absorber, bearing, mounting, grease
Special notes	

Code	UE/MVM/M1.5
Module title	**M1.5: Service Steering System**
Related Qualification	Part of Uganda Vocational Qualification (MOTOR VEHICLE MECHANIC UVQ1)
Qualification Level	1
Module purpose	After completion of this module, the trainee will be able to service and maintain a vehicle steering system.
Learning-Working Assignments (LWAs)	**LWA 5/1: Service the mechanical side of the steering system** **LWA 5/2: Check the hydraulic linkages** **LWA 5/3: Perform Occupational Health, Safety & Environmental Protection Practices** **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)	**LWA 5/1: Service the mechanical side of the steering system** PEX 1.1: Inspect steering linkage components PEX 1.2: Check steering wheel free play PEX 1.3: Lubricate rack and pinion PEX 1.4: Replace tie rod ends PEX 1.5: Replace rack boots
	LWA 5/2: Check the hydraulic connections PEX 2.1: Check the condition and tension of the drive belt PEX 2.2: Check power steering fluid level PEX 2.3: Inspect power steering fluid leaks PEX 2.4: Check condition of power steering hoses PEX 2.5: Replace power steering belt PEX 2.6: Bleed the steering system
	LWA 5/3: Perform Occupational Health, Safety & Environmental Protection Practices PEX 3.1: Wear PPE PEX 3.2: Administer First aid PEX 3.3: Perform fire fighting PEX 3.4: Manage waste PEX 3.5: Display safety signs

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 recognized reference materials as appropriate*:* • Functions of the steering system • Principles of operation of hydraulic mechanisms of the steering system • Types of steering gear boxes • Operating principles of the hydraulics • Functions of different steering components • Steering geometry • Technical drawing • Gear calculation • Power transmission
Average duration of learning	130 hours (16 days) of nominal learning suggested to include: • 4 days of occupational theory and • 12 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 recognized assessment body using related Practical and Written Test Items from Item bank.
Minimum required tools/ equipment/ implements or equivalent	Hydraulic jack, stands, assorted spanners, torque wrench, press machine, hammer i.e., ball pane & rubber hammer, rubber boots, steering cut out models, training vehicle

Code	UE/MVM/M1.6
Module title	**M1.6: Service electrical systems**
Related Qualification	Part of Uganda Vocational Qualification (MOTOR VEHICLE MECHANIC UVQ1)
Qualification Level	1
Module purpose	After completion of this module, the trainee will be able to inspect and perform minor repair of electrical systems.
Learning-Working Assignments (LWAs)	**LWA 6/1: Service a battery** **LWA 6/2: Service starting system** **LWA 6/3: Service ignition system** **LWA 6/4: Service charging system** **LWA 6/5: Service lighting system** **LWA 6/6: Service accessories system** **LWA 6/7: Perform Occupational Health, Safety & 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)	**LWA 6/1: Service a battery** PEX 1.1: Carry out on-the vehicle battery Maintenance PEX 1.2: Carry out off-the vehicle battery Maintenance PEX 1.3: Jump start a vehicle

	LWA 6/2: Service starting system PEX 2.1: Check for loose connections PEX 2.2: Check for condition of cables and wires PEX 2.3: Service a solenoid switch PEX 2.4: Check starter motor mount bolt to the bell housing
	LWA 6/3: Service ignition system PEX 3.1: Inspect high tension leads PEX 3.2: Remove spark plugs PEX 3.3: Clean spark plugs PEX 3.4: Adjust spark plug gaps PEX 3.5: Install spark plugs
	LWA 6/4: Service charging system PEX 4.1: Inspect charging system components PEX 4.2: Inspect condition and tension of drive belt PEX 4.3: Inspect battery warning light PEX 4.4: Inspect cable connection and insulation PEX 4.5: Inspect alternator mounting belts PEX 4.6: Adjust drive belt tension PEX 4.7: Check charging voltage
	LWA 6/5: Service lighting system PEX 5.1: Change Head lamp bulbs PEX 5.2: Change Parking lamp bulbs PEX 5.3: Change Indicator & Hazard lamp bulbs PEX 5.4: Change Brake Lamps bulbs PEX 5.5: Change Reverse lamp bulbs PEX 5.6: Change Fog Lamp bulbs PEX 5.7: Check dash board warning light PEX 5.8: Check for the looseness and firmness of cables and wires PEX 5.9: Check the fuses

	LWA 6/6: Service accessories system PEX 6.1: Check the horn PEX 6.2: Change the wiper blades PEX 6.3: Check the radio PEX 6.4: Inspect the window and door locks PEX 6.5: Check the functionality of the AC
	LWA 6/7: Perform Occupational Health, Safety & Environmental Protection Practices PEX 7.1: Wear PPE PEX 7.2: Administer First aid PEX 7.3: Perform firefighting mock-drills PEX 7.4: Manage waste PEX 7.5: Display safety signs
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 recognized reference materials as appropriate:* • Types of motor vehicle batteries • Measuring voltage of components • Connecting battery to electrical components • Testing wire continuity of wires • Fire-fighting procedures • Principles on first aid • Magnetism • Principles of electricity • Electronic components • Sources of electricity • Ohms law • Electrolysis • Use of electrical measuring instruments • Safety precautions taken while servicing battery
Average duration of learning	70 hours (9 days) of nominal learning suggested to include: • 2 days of occupational theory and • 7 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 recognized assessment body using related Practical and Written Test Items from Item bank.
Minimum required tools/ equipment/ implements or equivalent	Jump starting cables, fully charged battery, hydrometer, double ended spanner set, combination pliers, flat screw driver, high-rate discharge tester, multimeter, emery cloth, fire extinguisher, battery charger, load tester, LED test lamp, tool box
Minimum required materials and consumables or equivalent	Distilled water, electrolyte, stationary, first aid box, assorted bulbs, fuses, relay switches
Special notes	

3.0 ATP- PART III
Assessment Instruments for MOTOR VEHICLE MECHANIC

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 **MOTOR VEHICLE MECHANIC** are included. A larger selection of test items can be obtained as electronic or printed copies from designated outlets.

3.9 Overview of test item samples included:

No.	Type of Test Item	Numbers included
1	Written (Theory)- Short Answer	2
2.	Written (Theory)- Multiple Choice	3
3.	Written (Theory)- Matching item- (Generic)	1
4.	Written (Theory)- Matching item (Work sequence)	2
5.	Written (Theory)- Matching item-(cause and effect)	2
6.	Performance (Practical) Test Items	2
	Total	**12**

WRITTEN TEST ITEMS (SAMPLES)

<table>
<tr><td>DIT/ QS</td><td colspan="4">Test Item Database
Written (Theory) Test Item- no. 1</td></tr>
<tr><td>Occupational Title:</td><td colspan="4">MOTOR VEHICLE MECHANIC</td></tr>
<tr><td>Competence level:</td><td colspan="4">Level 1</td></tr>
<tr><td>Code no.</td><td colspan="4">MVM</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">C1</td></tr>
<tr><td>Date of OP:</td><td colspan="4">January 2022</td></tr>
<tr><td>Related module:</td><td colspan="4">M1.1</td></tr>
<tr><td>Time allocation:</td><td colspan="4">2 minutes</td></tr>
</table>

Test Item	List 5 safety rules to be followed during servicing a vehicle engine
Answer spaces	(i) ..... (ii) ..... (iii) ..... (iv) ..... (v) .....
Expected key (answers)	(i) Wear safety gears (ii) Use recommended engine oil (iii) Use proper tools and equipment (iv) Don't spill oils (v) Give the recommended mileage (vi) One should have a helper (vii) One should have the skill (viii) Knowledge of quantity of oil to be added (ix) Smoking and fire are not allowed while carrying out service (x) Carry out service from an inspection pit (xi) Don't start a vehicle before service is completed

<table>
<tr><th>DIT/ QS</th><th colspan="4">Test Item Database
Written (Theory) Test Item- no. 2</th></tr>
<tr><td>Occupational Title:</td><td colspan="4">MOTOR VEHICLE MECHANIC</td></tr>
<tr><td>Competence level:</td><td colspan="4">Level 1</td></tr>
<tr><td>Code no.</td><td colspan="4">MVM</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">C1</td></tr>
<tr><td>Date of OP:</td><td colspan="4">January 2022</td></tr>
<tr><td>Related module:</td><td colspan="4">M1.1</td></tr>
<tr><td>Time allocation:</td><td colspan="4">2 minutes</td></tr>
</table>

Test Item	List down 4 activities done during periodic service of a vehicle
Answer spaces	i. ..... ii. …… iii. …… iv. ……..
Expected key (answers)	i. Change engine oil ii. Change oil filters iii. Change fuel filters iv. Inspect levels of coolant, brake & clutch fluid, steering fluid v. Clean the air filter vi. Check on other engine accessories (drive belt, battery) vii. Check for oil leaks viii. Check for loose bolts and nuts of suspension and steering ix. Check engine mountings and transmission mountings

DIT/ QS	Test Item Database Written (Theory) Test Item no.3
Occupational Title:	MOTOR VEHICLE MECHANIC
Competence level:	Level 1
Code no.	MVM
Test Item type:	Short answer:
	Multiple choice: ✓
	Matching item: Generic / Cause-Effect / Work-sequence

Complexity level:	C1
Date of OP:	January 2022
Related modules:	M1.5
Time allocation:	1 minutes

Test Item	When the battery electrolyte level is low, it can be topped up using ……
Distractors and correct answers	A. Tap water B. Distilled water C. Sea water D. Electrolyte

Key (answer)	**B**

DIT/ QS	Test Item Database Written (Theory) Test Item no.4
Occupational Title:	MOTOR VEHICLE MECHANIC
Competence level:	Level 1
Code no.	MVM
Test Item type:	Short answer Multiple choice ✓ Matching item: Generic / Cause-Effect / Work-sequence
Complexity level:	C1
Date of OP:	October 2021
Related modules:	M1.5
Time allocation:	1 Minutes

Test Item	ATF can be used in……
Distractors and correct answers	A. Engine B. Brake C. Cooling system D. Transmission

Key (answer)	**D**

DIT/ QS	Test Item Database Written (Theory) Test Item no.5
Occupational Title:	MOTOR VEHICLE MECHANIC
Competence level:	Level 1
Code no.	MVM
Test Item type:	Short answer: Multiple choice: ✓ Matching item: Generic / Cause-Effect / Work-sequence
Complexity level:	C2
Date of OP:	October 2021
Related modules:	M1.2
Time allocation:	2 minutes

Test Item	If the braking system is inefficient, the following should be checked.
Distractors and correct answers	A. Fluid level, lining wear, leakage B. Water level, Tyre pressure, pedal travel C. Transmission fluid, clutch fluid, master cylinder D. Wheel cylinder kit, tyre wear, engine oil

Key (answer)	**A**

DIT/ QS	Test Item Database Written (Theory) Test Item- no.6
Occupational Title:	MOTOR VEHICLE MECHANIC
Competence level:	Level 1
Code no.	MVM
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:	4 Minutes

Test Item	Match the following engine faults to their causes on a motor vehicle operation

Column A (Faults)	
1	Engine over heating
2	Engine squeaking noise
3	Vehicle body vibration
4	Lack of air supply to the vehicle interior
5	High fuel consumption
6	

Column B (Causes)	
A	Clogged AC air outlets
B	Air cleaner dirty
C	Poor drive belt tension
D	Worn out engine mountings
E	Faulty Lubrication system
F	Faulty cooling system

Key (answer)	**1:F, 2:C, 3:D, 4:A, 5:B**

DIT/ QS	Test Item Database Written (Theory) Test Item- no.7
Occupational Title:	MOTOR VEHICLE MECHANIC
Competence level:	Level 1
Code no.	MVM
Test Item type:	Short answer Multiple choice Matching item: Generic / Cause-Effect √ / Work-sequence
Complexity level:	C2
Date of OP:	January 2022
Related module:	M1.4
Time allocation:	4 Minutes

Test Item	Match the following vehicle brake faults to their causes

Column A (brake faults)	
1	Fluid leakage at wheels
2	Drum overheat
3	Spongy brake pedal
4	Hard braking
5	
6	

Column B (causes)	
A	Air in the system
B	Faulty servo unit
C	Incorrect shoe adjustment
D	Broken rod
E	Worn out seals
F	

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

DIT/ QS	Test Item Database Written (Theory) Test Item- no.8
Occupational Title:	MOTOR VEHICLE MECHANIC
Competence level:	Level 1
Code no.	MVM
Test Item type:	Short answer: Multiple choice: Matching item: Generic: Cause-Effect: Work-sequence: √
Complexity level:	C3
Date of OP:	October 2021
Related module:	M1.3
Time allocation:	7 Minutes

Test Item	Re-arrange the following work steps carried out during battery maintenance on the vehicle

Column A (chronology)	**Column B (Work steps) in wrong chronology order**	
1st	A1	Clean the battery body
2nd	B4	Test voltage
3rd	C3	Clean battery terminals
4th	D7	Top up electrolyte
5th	E5	Check electrolyte level
6th	F9	Check the battery clamps and tighten if loose
7th	G8	Grease terminals
8th	H2	Check terminals and tighten if loose
9th	I6	Test electrolyte specific gravity

Key (answer)	**1:A, 2:C, 3:E, 4:D, 5:I, 6:B, 7:F, 8:H, 9:G**

DIT/ QS	**Test Item Database** **Written (Theory) Test Item- no. 9**
Occupational Title:	MOTOR VEHICLE MECHANIC
Competence level:	Level 1
Code no.	MVM
Test Item type:	Short answer Multiple choice Matching item: Generic √; Cause-Effect; Work-sequence
Complexity level:	C3
Date of OP:	January 2022
Related module:	M1.6
Time allocation:	4 Minutes

Test Item	Match the following vehicle electrical components in column A to their respective functions in column B

Column A (components)	
1	Battery
2	Starter-motor
3	Alternator
4	Spark plug
5	
6	

Column B (function)	
A	Operates horn
B	Ignites the mixture
C	Cranks the engine
D	Source of electricity
E	Charges the battery
F	

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

DIT/ QS	**Test Item Database** **Written (Theory) Test Item- no. 10**			
Occupational Title:	MOTOR VEHICLE MECHANIC			
Competence level:	Level 1			
Code no.	MVM			
Test Item type:	Short answer			
	Multiple choice			
	Matching item	Generic	Cause-Effect	Work-sequence
				√
Complexity level:	C3			
Date of OP:	January 2022			
Related module:	M1.6			
Time allocation:	5 Minutes			

Test Item	Arrange the following work steps in jump starting a vehicle

Column A (chronology)	**Column B (Work steps) in wrong chronology order**	
1st	A	Inspect the battery terminals of both vehicles
2nd	B	Disconnect the negative jumper cable
3rd	C	Crank the engine until it starts
4th	D	Test battery voltages
5th	E	Connect jumper cables in parallel
6th	F	Idle the donor vehicle
7th	G	Disconnect the positive jumper cable

Key (answer)	1:A, 2:D, 3:E, 4:F, 5:C, 6:G, 7:B

PERFORMANCE TEST ITEMS (SAMPLES)

DIT/ QS	Test Item Database Performance Test Item- no.11
Occupational Title:	MOTOR VEHICLE MECHANIC
Competence level:	Level 1
Code no.	MVM
Test Item:	Service brake light of a given vehicle
Complexity level:	P3
Date of OP:	JANUARY 2022
Related module:	M1.6
Related skills and knowledge:	• Service indicator and hazard lights • Service reverse lights • Service fog lights
Required tools, Materials and Equipment:	screw driver, tester, bulb, charged battery, wire, Insulation tape
Time allocation:	2hrs
Preferred venue:	Workshop
Remarks for Candidate	• Observe rules and regulations
Remarks for assessors	• Provide all the required tools, equipment and materials for assessment.

#	Assessment criteria	Scoring guide	Max Score	
			Process	Result
1	Preparation before task	Wore PPE (safety shoes, overall, gloves)		2
		Selected tools for the task observed (screw driver, tester)		2
		Selected materials observed (bulb, charged battery, wire, Insulation tape, fender covers, seat covers)		2
2	Removing the light housing	Untightened screws	2	
		Screws untightened diagonally		4
		Unlocked the light housing		2
3	Carrying out brake light inspection	Stepped on foot brake	2	
		Identified which side is not lighting		4
4	Inspecting bulb holders			
		Checked bulb holder for corrosion		3
		Cleaned bulb holders	4	
5	Testing bulbs	Connected bulb to test lamp	2	
		Connected the test lamp to the battery	2	
		Switched on the test lamp	2	
		Bulb functionality verified		3
6	Bulb Replacement	Inserted the bulb in the holder	2	
		Inserted bulb sits firmly in the holder observed		3
		Tested the bulb	3	
		A lighting bulb observed		4
7	Fixing the housing	Put back the housing	2	
		Housing in position observed		4
		Tightened screws	2	
		Firmly fitted screws observed		2
		All screws fitted		2
		Screws tightened diagonally		4

8	Housekeeping	Cleaned tools	2	
		Tools secured in the tool box observed		2
			25	**43**
	TOTAL		**68**	

DIT/ QS	**Test Item Database** **Performance Test Item- no.12**
Occupational Title:	MOTOR VEHICLE MECHANIC
Competence level:	Level 1
Code no.	MVM
Test Item:	Repair a malfunctioned disc brake assembly of a given vehicle
Complexity level:	P3
Date of OP:	January 2022
Related module:	M1.2
Related skills and knowledge:	• Principles of operation of a hydraulic, pneumatic and mechanical braking system • Methods of bleeding hydraulic brake systems • Health and safety precautions in servicing the brake system • Causes of different brake system faults • Measuring skills (micrometer, tape measure, vernier caliper)
Required tools, Materials and Equipment:	wheel spanner, wedges, jack, G-clamp, bleeding tube, caliper, disc ruler, brake fluid, cotton waste, wood(supports), Micrometer, dial gauge
Time allocation:	1hour 30min
Preferred venue:	Workshop
Remarks for Candidate	• Observe rules and regulations
Remarks for assessors	• Provide all the required tools, equipment and materials for assessment.

#	Assessment criteria	Scoring guide	Max Score	
			Process	Result
1	Preparation before task	Wore PPE (safety shoes, overall, gloves, helmet, small towels, safety goggles		2
		Selected tools for the assignment observed (wheel spanner, wedges, jack, G-clamp, bleeding tube, caliper, disc ruler, micrometer, dial gauge)		2
		Selected materials for the assignment observed (brake fluid, cotton waste, wood(supports))		2
2	Removing the wheel	Wedged the vehicle	2	
		Correct size and shape of wedges used		3
		Loosened the wheel nuts	2	2
		Jacked the vehicle	2	
		Jacking point was considered		3
		Supported the vehicle on supports	2	
		Supported with right sizes of supports		3
		Fully untightened the wheel nuts	2	
		Removed fully the wheel	2	
		Kept the wheel nuts in a dry container		3
3	Inspecting the brake disc	Inspected wear of the brake disc	2	
		Used micrometer to measure the thickness of the brake disc		3
		Compared the measurement to the manufacturer's specification		3
		Inspected flatness of the disc plate using dial gauge	2	
4	Inspecting brake pads	Removed the brake pads	2	
		Inspected wear and damages of pads	2	
		Used caliper to measure thickness of pads		3
		Inspected brake fluid pipe line for leakages	2	
		Removed the rubber boots from caliper		3
		Inspected looseness of caliper	2	

		Detected the caliper for vibrations and looseness		3
5	Replacing brake pads	Pressed the piston back	2	
		Used G-clamp for space		3
		Installed brake pads	2	
		Installed brake pads according to repair/service manual		4
6	Carrying out brake bleeding	Checked brake fluid level in the reservoir	2	
		Connected bleeding capillary tube/pipe on the bleeding nipple and the other end to the transparent container	2	
		Depressed the brake pedal	2	
		Requested supervisor to depress the brake pedal 2-3 times		3
		Loosened the bleeding nipple while observing the bubbles from the fluid	2	2
		Depressing repeated until no bubbles came out	2	2
		Fully tighten the bleeding nipple	2	
		Toped up brake fluid to correct level	2	
		Removed the capillary tube and transparent container	2	2
8	Fixing back the wheel	Fitted back the wheel	3	
		Hand tightened the nuts		3
		Jacked up vehicle	2	
		Removed supports		3
		Lowered vehicle to the ground	3	
		Fully tightened wheel nuts diagonally		4
9	Housekeeping	Cleaned tools		2
		Packed cleaned tools in tool box, wedges removed		2
		Cleaned work place		2
		Managed wasted brake fluid as recommended by environmental law		4
			52	**71**
	TOTAL		**121**	

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 **MOTOR VEHICLE MECHANIC.**

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 MOTOR VEHICLE MECHANIC 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 MOTOR VEHICLE MECHANIC 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.	Janja Bernard	Curriculum specialist NCDC
2.	Asiimwe Patrick	Senior Examiner Nakawa VTI
3.	Kibirige Njuki Joseph	UNEB Representative Ntinda VTI
4.	Gidaga Kitts Morris	Nakawa VTI
5.	Futsum Yosef	Toyota Ug
6.	Tegule Emmanuel	NEC
7.	Embati Philliam	Nissan Motorcare Ug Ltd
8.	Jakisa Joseph	Tracknav SMC Uganda
9.	Baleta Robert	Bugembe Mechanical Workshop
10.	Tugume Samuel	Bidicol Ug Ltd
11.	Kunguvu Mukasa H	Global Driving School

4.6 Facilitator team

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

1. **Team Leader** – Ms. Mukyala Ruth, Ag Deputy Director, DIT
2. **Facilitators –** Mr. Ochwo Richard, Mr Orikiriza Andrew.
3. **Data Entrants**- Ms. Agnes Nahwera, Mr. Kabibi Enock, DIT Qualification Standards
4. **Compiled** by Ms. Agnes Nahwera, Mr. Kabibi Enock, DIT Qualification Standards
5. **Edited** by Ms. Mukyala Ruth Ag. DD, DIT, Qualification Standards Dept. DIT
6. **Coordinated** by – Mr Byakatonda Patrick, Ag. Director, DIT;

4.7 Reference time:

The Assessment and Training Package was compiled in January 2022 and may be periodically revised to match the dynamic trends in the occupation and hence issued in different versions:

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