



education

Department:
Education
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NATIONAL CERTIFICATES (VOCATIONAL)

ASSESSMENT GUIDELINES

AUTOMOTIVE REPAIR AND MAINTENANCE

NQF Level 3

September 2007

AUTOMOTIVE REPAIR AND MAINTENANCE – LEVEL 3

CONTENTS

SECTION A: PURPOSE OF THE SUBJECT ASSESSMENT GUIDELINES

SECTION B: ASSESSMENT IN THE NATIONAL CERTIFICATES (VOCATIONAL)

- 1 Assessment in the National Certificates (Vocational)**
- 2 Assessment framework for vocational qualifications**
 - 2.1 Internal continuous assessment (ICASS)
 - 2.2 External summative assessment (ESASS)
- 3 Moderation of assessment**
 - 3.1 Internal moderation
 - 3.2 External moderation
- 4 Period of validity of internal continuous assessment (ICASS)**
- 5 Assessor requirements**
- 6 Types of assessment**
 - 6.1 Baseline assessment
 - 6.2 Diagnostic assessment
 - 6.3 Formative assessment
 - 6.4 Summative assessment
- 7 Planning assessment**
 - 7.1 Collecting evidence
 - 7.2 Recording
 - 7.3 Reporting
- 8 Methods of assessment**
- 9 Instruments and tools for collecting evidence**
- 10 Tools for assessing student performance**
- 11 Selecting and/or designing recording and reporting systems**
- 12 Competence descriptions**
- 13 Strategies for collecting evidence**
 - 13.1 Record sheets
 - 13.2 Checklists

SECTION C: ASSESSMENT IN AUTOMOTIVE REPAIR AND MAINTENANCE

- 1 Schedule of assessment**
- 2 Recording and reporting**
- 3 Internal assessment of Subject Outcomes in Automotive Repair & Maintenance - Level 3**
- 4 Specifications for external assessment in Automotive Repair And Maintenance - Level 3**
 - 4.1 Integrated summative assessment task (ISAT)
 - 4.2 National Examination

SECTION A: PURPOSE OF THE SUBJECT ASSESSMENT GUIDELINES

This document provides the lecturer with guidelines to develop and implement a coherent, integrated assessment system for Automotive Repair and Maintenance in the National Certificates (Vocational). It must be read with the *National Policy Regarding Further Education and Training Programmes: Approval of the Documents, Policy for the National Certificates (Vocational) Qualifications at Levels 2 to 4 on the National Qualifications Framework (NQF)*. This assessment guideline will be used for National Qualifications Framework Levels 2-4.

This document explains the requirements for the internal and external subject assessment. The lecturer must use this document with the *Subject Guidelines: Automotive Repair and Maintenance* to prepare for and deliver Automotive Repair and Maintenance. Lecturers should use a variety of resources and apply a range of assessment skills in the setting, marking and recording of assessment tasks.

SECTION B: ASSESSMENT IN THE NATIONAL CERTIFICATES (VOCATIONAL)

1 ASSESSMENT IN THE NATIONAL CERTIFICATES (VOCATIONAL)

Assessment in the National Certificates (Vocational) is underpinned by the objectives of the National Qualifications Framework (NQF). These objectives are to:

- Create an integrated national framework for learning achievements.
- Facilitate access to and progression within education, training and career paths.
- Enhance the quality of education and training.
- Redress unfair discrimination and past imbalances and thereby accelerate employment opportunities.
- Contribute to the holistic development of the student by addressing:
 - social adjustment and responsibility;
 - moral accountability and ethical work orientation;
 - economic participation; and
 - nation-building.

The principles that drive these objectives are:

- **Integration**

To adopt a unified approach to education and training that will strengthen the human resources development capacity of the nation.

- **Relevance**

To be dynamic and responsive to national development needs.

- **Credibility**

To demonstrate national and international value and recognition of qualification and acquired competencies and skills.

- **Coherence**

To work within a consistent framework of principles and certification.

- **Flexibility**

To allow for creativity and resourcefulness when achieving Learning Outcomes, to cater for different learning styles and use a range of assessment methods, instruments and techniques.

- **Participation**

To enable stakeholders to participate in setting standards and co-ordinating the achievement of the qualification.

- **Access**

To address barriers to learning at each level to facilitate students' progress.

- **Progression**

To ensure that the qualification framework permits individuals to move through the levels of the national qualification via different, appropriate combinations of the components of the delivery system.

- **Portability**

To enable students to transfer credits of qualifications from one learning institution and/or employer to another institution or employer.

- **Articulation**

To allow for vertical and horizontal mobility in the education system when accredited pre-requisites have been successfully completed.

- **Recognition of Prior Learning**

To grant credits for a unit of learning following an assessment or if a student possesses the capabilities specified in the outcomes statement.

- **Validity of assessments**

To ensure assessment covers a broad range of knowledge, skills, values and attitudes (SKVAs) needed to demonstrate applied competency. This is achieved through:

- clearly stating the outcome to be assessed;
- selecting the appropriate or suitable evidence;
- matching the evidence with a compatible or appropriate method of assessment; and
- selecting and constructing an instrument(s) of assessment.

- **Reliability**

To assure assessment practices are consistent so that the same result or judgment is arrived at if the assessment is replicated in the same context. This demands consistency in the interpretation of evidence; therefore, careful monitoring of assessment is vital.

- **Fairness and transparency**

To verify that no assessment process or method(s) hinders or unfairly advantages any student. The following could constitute unfairness in assessment:

- Inequality of opportunities, resources or teaching and learning approaches
- Bias based on ethnicity, race, gender, age, disability or social class
- Lack of clarity regarding Learning Outcome being assessed
- Comparison of students' work with other students, based on learning styles and language

- **Practicability and cost-effectiveness**

To integrate assessment practices within an outcomes-based education and training system and strive for cost and time-effective assessment.

2 ASSESSMENT FRAMEWORK FOR VOCATIONAL QUALIFICATIONS

The assessment structure for the National Certificates (Vocational) qualification is as follows:

2.1 Internal continuous assessment (ICASS)

Knowledge, skills values, and attitudes (SKVAs) are assessed throughout the year using assessment instruments such as projects, tests, assignments, investigations, role-play and case studies. The internal continuous assessment (ICASS) practical component is undertaken in a real workplace, a workshop or a "Structured Environment". This component is moderated internally and externally quality assured by Umalusi. All internal continuous assessment (ICASS) evidence is kept in a Portfolio of Evidence (PoE) and must be readily available for monitoring, moderation and verification purposes.

2.2 External summative assessment (ESASS)

The external summative assessment is either a single or a set of written papers set to the requirements of the Subject Learning Outcomes. The Department of Education administers the theoretical component according to relevant assessment policies.

A compulsory component of external summative assessment (ESASS) is the **integrated summative assessment task (ISAT)**. This assessment task draws on the students' cumulative learning throughout the year. The task requires **integrated application of competence** and is executed under strict assessment conditions. The task should take place in a simulated or "Structured Environment". The integrated summative assessment task (ISAT) is the most significant test of students' ability to apply their acquired knowledge.

The integrated assessment approach allows students to be assessed in more than one subject with the same integrated summative assessment task (ISAT).

External summative assessments will be conducted annually between October and December, with provision made for supplementary sittings.

3 MODERATION OF ASSESSMENT

3.1 Internal moderation

Assessment must be moderated according to the internal moderation policy of the Further Education and Training (FET) college. Internal college moderation is a continuous process. The moderator's involvement starts with the planning of assessment methods and instruments and follows with continuous collaboration with and support to the assessors. Internal moderation creates common understanding of Assessment Standards and maintains these across vocational programmes.

3.2 External moderation

External moderation is conducted by the Department of Education, Umalusi and, where relevant, an Education and Training Quality Assurance (ETQA) body according to South African Qualifications Authority (SAQA) and Umalusi standards and requirements.

The external moderator:

- monitors and evaluates the standard of all summative assessments;
- maintains standards by exercising appropriate influence and control over assessors;
- ensures proper procedures are followed;
- ensures summative integrated assessments are correctly administered;
- observes a minimum sample of ten (10) to twenty-five (25) percent of summative assessments;
- gives written feedback to the relevant quality assessor; and
- moderates in case of a dispute between an assessor and a student.

Policy on inclusive education requires that assessment procedures for students who experience barriers to learning be customised and supported to enable these students to achieve their maximum potential.

4 PERIOD OF VALIDITY OF INTERNAL CONTINUOUS ASSESSMENT (ICASS)

The period of validity of the internal continuous assessment mark is determined by the *National Policy on the Conduct, Administration and Management of the Assessment of the National Certificates (Vocational)*.

The internal continuous assessment (ICASS) must be re-submitted with each examination enrolment for which it constitutes a component.

5 ASSESSOR REQUIREMENTS

Assessors must be subject specialists and should ideally be declared competent against the standards set by the ETDP SETA. If the lecturer conducting the assessments has not been declared a competent assessor, an assessor who has been declared competent may be appointed to oversee the assessment process to ensure the quality and integrity of assessments.

6 TYPES OF ASSESSMENT

Assessment benefits the student and the lecturer. It informs students about their progress and helps lecturers make informed decisions at different stages of the learning process. Depending on the intended purpose, different types of assessment can be used.

6.1 Baseline assessment

At the beginning of a level or learning experience, baseline assessment establishes the knowledge, skills, values and attitudes (SKVAs) that students bring to the classroom. This knowledge assists lecturers to plan learning programmes and learning activities.

6.2 Diagnostic assessment

This assessment diagnoses the nature and causes of learning barriers experienced by specific students. It is followed by guidance, appropriate support and intervention strategies. This type of assessment is useful to make referrals for students requiring specialist help.

6.3 Formative assessment

This assessment monitors and supports teaching and learning. It determines student strengths and weaknesses and provides feedback on progress. It determines if a student is ready for summative assessment.

6.4 Summative assessment

This type of assessment gives an overall picture of student progress at a given time. It determines whether the student is sufficiently competent to progress to the next level.

7 PLANNING ASSESSMENT

An assessment plan should cover three main processes:

7.1 Collecting evidence

The assessment plan indicates which Subject Outcomes and Assessment Standards will be assessed, what assessment method or activity will be used and when this assessment will be conducted.

7.2 Recording

Recording refers to the assessment instruments or tools with which the assessment will be captured or recorded. Therefore, appropriate assessment instruments must be developed or adapted.

7.3 Reporting

All the evidence is put together in a report to deliver a decision for the subject.

8 METHODS OF ASSESSMENT

Methods of assessment refer to who carries out the assessment and includes lecturer assessment, self-assessment, peer assessment and group assessment.

LECTURER ASSESSMENT	The lecturer assesses students' performance against given criteria in different contexts, such as individual work, group work, etc.
SELF-ASSESSMENT	Students assess their own performance against given criteria in different contexts, such as individual work, group work, etc.
PEER ASSESSMENT	Students assess another student's or group of students' performance against given criteria in different contexts, such as individual work, group work, etc.
GROUP ASSESSMENT	Students assess the individual performance of other students within a group or the overall performance of a group of students against given criteria.

9 INSTRUMENTS AND TOOLS FOR COLLECTING EVIDENCE

All evidence collected for assessment purposes is kept or recorded in the student's PoE.

The following table summarises a variety of methods and instruments for collecting evidence. A method and instrument is chosen to give students ample opportunity to demonstrate the Subject Outcome has been attained. This will only be possible if the chosen methods and instruments are appropriate for the target group and the Specific Outcome being assessed.

	METHODS FOR COLLECTING EVIDENCE		
	Observation-based (Less structured)	Task-based (Structured)	Test-based (More structured)
Assessment instruments	<ul style="list-style-type: none"> • Observation • Class questions • Lecturer, student, parent discussions 	<ul style="list-style-type: none"> • Assignments or tasks • Projects • Investigations or research • Case studies • Practical exercises • Demonstrations • Role-play • Interviews 	<ul style="list-style-type: none"> • Examinations • Class tests • Practical examinations • Oral tests • Open-book tests
Assessment tools	<ul style="list-style-type: none"> • Observation sheets • Lecturer's notes • Comments 	<ul style="list-style-type: none"> • Checklists • Rating scales • Rubrics 	<ul style="list-style-type: none"> • Marks (e.g. %) • Rating scales (1-7)
Evidence	<ul style="list-style-type: none"> • Focus on individual students • Subjective evidence based on lecturer observations and impressions 	<p>Open middle: Students produce the same evidence but in different ways.</p> <p>Open end: Students use same process to achieve different results.</p>	Students answer the same questions in the same way, within the same time.

10 TOOLS FOR ASSESSING STUDENT PERFORMANCE

Rating scales are marking systems where a symbol (such as 1 to 7) or a mark (such as 5/10 or 50%) is defined in detail. The detail is as important as the coded score. Traditional marking, assessment and evaluation mostly used rating scales without details such as what was right or wrong, weak or strong, etc.

Task lists and **checklists** show the student what needs to be done. These consist of short statements describing the expected performance in a particular task. The statements on the checklist can be ticked off when the student has adequately achieved the criterion. Checklists and task lists are useful in peer or group assessment activities.

Rubrics are a hierarchy (graded levels) of criteria with benchmarks that describe the minimum level of acceptable performance or achievement for each criterion. Using rubrics is a different way of assessing and cannot be compared to tests. Each criterion described in the rubric must be assessed separately. Mainly two types of rubrics, namely holistic and analytical, are used.

11 SELECTING AND/OR DESIGNING RECORDING AND REPORTING SYSTEMS

The selection or design of recording and reporting systems depends on the purpose of recording and reporting student achievement. **Why** particular information is recorded and **how** it is recorded determine which instrument will be used.

Computer-based systems, for example spreadsheets, are cost and time effective. The recording system should be user-friendly and information should be easily accessed and retrieved.

12 COMPETENCE DESCRIPTIONS

All assessment should award marks to evaluate specific assessment tasks. However, marks should be awarded against rubrics and not be simply a total of ticks for right answers. Rubrics should explain the competence level descriptors for the skills, knowledge, values and attitudes (SKVAs) that a student must demonstrate to achieve each level of the rating scale.

When lecturers or assessors prepare an assessment task or question, they must ensure that the task or question addresses an aspect of a Subject Outcome. The relevant Assessment Standard must be used to create the rubric to assess the task or question. The descriptions must clearly indicate the minimum level of attainment for each category on the rating scale.

13 STRATEGIES FOR COLLECTING EVIDENCE

A number of different assessment instruments may be used to collect and record evidence. Examples of instruments that can be (adapted and) used in the classroom include:

13.1 Record sheets

The lecturer observes students working in a group. These observations are recorded in a summary table at the end of each project. The lecturer can design a record sheet to observe students' interactive and problem-solving skills, attitudes towards group work and involvement in a group activity.

13.2 Checklists

Checklists should have clear categories to ensure that the objectives are effectively met. The categories should describe how the activities are evaluated and against what criteria they are evaluated. Space for comments is essential.

SECTION C: ASSESSMENT IN AUTOMOTIVE REPAIR AND MAINTENANCE

1 SCHEDULE OF ASSESSMENT

At NQF levels 2, 3 and 4, lecturers will conduct assessments as well as develop a schedule of formal assessments that will be undertaken in the year. All three levels also have an external examination that accounts for 50 percent of the total mark. The marks allocated to assessment tasks completed during the year, kept or recorded in a PoE account for the other 50 percent.

The PoE and the external assessment include practical and written components. The practical assessment in Automotive Repair and Maintenance must, where necessary, be subjected to external moderation by Umalusi or an appropriate Education and Training Quality Assurance (ETQA) body, appointed by the Umalusi Council in terms of Section 28(2) of the *General and Further Education and Training Quality Assurance Act, 2001 (Act No. 58 of 2001)*.

2 RECORDING AND REPORTING

Automotive Repair and Maintenance, as is the case for all the other Vocational subjects, is assessed according to five levels of competence. The level descriptions are explained in the following table.

Scale of Achievement for the Vocational component

RATING CODE	RATING	MARKS %
5	Outstanding	80-100
4	Highly competent	70-79
3	Competent	50-69
2	Not yet competent	40-49
1	Not achieved	0-39

The programme of assessment should be recorded in the Lecturer's Portfolio of Assessment for each subject. The following at least should be included in the Lecturer's Assessment Portfolio:

- A contents page
- The formal schedule of assessment
- The requirements for each assessment task
- The tools used for each assessment task
- Recording instrument(s) for each assessment task
- A mark sheet and report for each assessment task

The college must standardise these documents.

The student's PoE must include at least:

- A contents page
- The assessment tasks according to the assessment schedule
- The assessment tools or instruments for the task
- A record of the marks (and comments) achieved for each task

Where a task cannot be contained as evidence in the PoE, its exact location must be recorded and it must be readily available for moderation purposes.

The following units guide internal assessment in Automotive Repairs and Maintenance Level 3:

	ASSESSMENT	COVERAGE
3	Formal written tests	One or more completed topics
1	Written exam	All completed topics
4	Practical assessment	Must cover the related Subject Outcome: e.g. Engine overhaul

ASSESSMENT OF AUTOMOTIVE REPAIR AND MAINTENANCE

LEVEL 3

3 INTERNAL ASSESSMENT OF SUBJECT OUTCOMES IN AUTOMOTIVE REPAIR AND MAINTENANCE - LEVEL 3

Topic 1: Removal of automotive main components

SUBJECT OUTCOME	
1.1 .Explain and perform cleaning procedures of automotive components.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Proper cleaning procedures for automotive components are described. 	<ul style="list-style-type: none"> • Describe proper cleaning procedures for automotive components.
<ul style="list-style-type: none"> • The functioning and cleaning of cleaning equipment is explained. 	<ul style="list-style-type: none"> • Explain the functioning and operation of the cleaning equipment.
<ul style="list-style-type: none"> • Components are cleaned for inspection. 	<ul style="list-style-type: none"> • Clean components for inspection.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Practical demonstration on cleaning and assessment of components. 	

SUBJECT OUTCOME	
1.2 Assess components according to specifications.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Different parts/components are identified. 	<ul style="list-style-type: none"> • Identify different parts/components.
<ul style="list-style-type: none"> • The functions of different components/parts are explained. 	<ul style="list-style-type: none"> • Explain the function of different parts/components.
<ul style="list-style-type: none"> • Cylinder blocks and heads are measured and recorded. 	<ul style="list-style-type: none"> • Measure and record cylinder blocks and heads.
<ul style="list-style-type: none"> • Piston and connecting rod assemblies are measured and recorded. 	<ul style="list-style-type: none"> • Measure and record piston and connecting rod assemblies.
<ul style="list-style-type: none"> • Camshaft is measured and recorded. 	<ul style="list-style-type: none"> • Measure and record camshaft.
<ul style="list-style-type: none"> • Gear chain and timing is inspected. 	<ul style="list-style-type: none"> • Inspect gear chain and timing.
<ul style="list-style-type: none"> • Crankshaft and bearings are measured and recorded. 	<ul style="list-style-type: none"> • Measure and record crankshaft and bearings.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Practical demonstration on cleaning and assessment of components. 	

SUBJECT OUTCOME	
1.3 Determine the serviceability of parts and components.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Technical data on components are obtained from the appropriate manual. 	<ul style="list-style-type: none"> • Obtain technical data on components from the appropriate manual.
<ul style="list-style-type: none"> • Procedures on assessment of parts are described. 	<ul style="list-style-type: none"> • Describe procedures to assess parts.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Practical demonstration on cleaning and assessment of components. 	

SUBJECT OUTCOME	
1.4 Compile and submit a condition report on services required (a “before service” report).	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Findings on serviceability of parts and components are interpreted. 	<ul style="list-style-type: none"> • Interpret findings on serviceability of parts and components.
<ul style="list-style-type: none"> • Necessary information on services required is recorded and submitted. 	<ul style="list-style-type: none"> • Record and submit necessary information on services required.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Practical demonstration on cleaning and assessment of components. 	

SUBJECT OUTCOME	
1.5 Identify and select correct tools and equipment for removing automotive components.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • The correct use and care of tools and equipment related to component removal is explained and demonstrated. 	<ul style="list-style-type: none"> • Explain and demonstrate the correct use and care for tools and equipment related to the removing of components.
<ul style="list-style-type: none"> • Service information and procedures are obtained from various sources. 	<ul style="list-style-type: none"> • Obtain instructions for relevant service information and procedures from various sources.
<ul style="list-style-type: none"> • Workshop equipment is selected and cared for. 	<ul style="list-style-type: none"> • Select and care for workshop equipment applicable to the task.
<ul style="list-style-type: none"> • Hand tools applicable to task are selected and cared for. 	<ul style="list-style-type: none"> • Select and care for hand tools applicable to the task.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Practical demonstration on cleaning and assessment of components. 	

SUBJECT OUTCOME	
1.6 Remove automotive components.	
<i>Range: ISO 9000.</i>	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Components and component parts are selected and named. 	<ul style="list-style-type: none"> • Select and name components and component parts.
<ul style="list-style-type: none"> • Components are removed in the correct order using quality procedures and the correct tools. 	<ul style="list-style-type: none"> • Remove components in the correct order using appropriate quality procedures and correct tools.
<ul style="list-style-type: none"> • Safety procedures are adhered to while removing components. 	<ul style="list-style-type: none"> • Adhere to safety procedures while removing components.
<ul style="list-style-type: none"> • Ferrous and non-ferrous metals of components are identified. 	<ul style="list-style-type: none"> • Identify ferrous and non-ferrous metals of the components.
<ul style="list-style-type: none"> • The work area is restored to a serviceable condition. 	<ul style="list-style-type: none"> • Restore the work area to a serviceable condition.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Student conducts a practical on the removal of components with the selected tools. 	

SUBJECT OUTCOME	
1.7 Complete documentation on removal of components (an “after service” report).	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Components removed are listed and numbered in the correct sequence. 	<ul style="list-style-type: none"> • List and number components removed in correct sequence.
<ul style="list-style-type: none"> • Work required on components is recorded. 	<ul style="list-style-type: none"> • Record details of work required on components.
<ul style="list-style-type: none"> • Additional faults are identified and recorded. 	<ul style="list-style-type: none"> • Identify and record additional faults.
<ul style="list-style-type: none"> • Information is communicated to the workshop manager/facilitator. 	<ul style="list-style-type: none"> • Communicate information to the workshop manager/facilitator.
<ul style="list-style-type: none"> • Documents are completed and processed. 	<ul style="list-style-type: none"> • Complete and process documents.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Student conducts an assignment on report writing. 	

Topic 2: Dismantling automotive main components

SUBJECT OUTCOME	
2.1 Explain dismantling procedures according to a specific manufacturer’s manual.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Tools and equipment needed for dismantling are identified from an appropriate manual. 	<ul style="list-style-type: none"> • Identify tools and equipment needed for dismantling from an appropriate manual.
<ul style="list-style-type: none"> • Correct preparation of the work area for dismantling is explained. 	<ul style="list-style-type: none"> • Describe correct preparation of the work area for dismantling.
<ul style="list-style-type: none"> • Procedures for dismantling and storage of components are explained. 	<ul style="list-style-type: none"> • Explain procedures for dismantling and storage of components.
<ul style="list-style-type: none"> • Safety procedures to follow during dismantling and storage of components are explained. 	<ul style="list-style-type: none"> • Explain safety procedures to follow during dismantling and storage of components.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Student conducts a practical on dismantling of components. 	

SUBJECT OUTCOME	
2.2 Dismantle components using appropriate tools, equipment and procedures.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Appropriate tools and equipment for dismantling are identified and selected. 	<ul style="list-style-type: none"> • Identify and select appropriate tools and equipment for dismantling.
<ul style="list-style-type: none"> • The work area is prepared for dismantling of components. 	<ul style="list-style-type: none"> • Prepare the work area for dismantling of components.
<ul style="list-style-type: none"> • Components are correctly dismantled and numbered to be stored. 	<ul style="list-style-type: none"> • Correctly dismantle components and number components to be stored.
<ul style="list-style-type: none"> • Component repair procedures are explained. 	<ul style="list-style-type: none"> • Explain component repair procedures.
<ul style="list-style-type: none"> • Safety procedures are adhered to while dismantling components. 	<ul style="list-style-type: none"> • Adhere to safety procedures while dismantling components.

ASSESSMENT TASKS OR ACTIVITIES
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Student conducts a practical on dismantling of components.

SUBJECT OUTCOME	
2.3 Repair relevant parts/components.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Condition of components is identified and a decision is taken on work to be done. <i>Range: Welding, engineering, testing and machining.</i> 	<ul style="list-style-type: none"> • Identify condition of components and decide on work to be done. <i>Range: Welding, engineering, testing and machining.</i>
<ul style="list-style-type: none"> • Manufacturer's specifications and procedures are followed for repairs 	<ul style="list-style-type: none"> • Follow manufacturer's specifications and procedures during repairs.
<ul style="list-style-type: none"> • Components are checked and tested after completion of repairs. 	<ul style="list-style-type: none"> • Check and test components after completion of repairs.
<ul style="list-style-type: none"> • Components are stored in a designated area. 	<ul style="list-style-type: none"> • Store components in a designated area.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Student conducts a practical on dismantling of components. 	

Topic 3: Installing automotive main components

SUBJECT OUTCOME	
3.1 .Explain and verify serviceability of components.	
<i>Range: Cylinder head, cylinder block, crank shaft, camshaft, piston and conrods, also all other components enabling interactions of main components.</i>	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Parts/components that need to be prepared prior to assembly are identified. 	<ul style="list-style-type: none"> • Identify parts/components that need to be prepared prior to assembly.
<ul style="list-style-type: none"> • The condition of components is inspected. 	<ul style="list-style-type: none"> • Inspect the condition of components.
<ul style="list-style-type: none"> • Component repairs and required procedures are explained according to manufacturer's or engineering specifications. 	<ul style="list-style-type: none"> • Explain component repairs and required procedures according to manufacturer's or engineering specifications.
<ul style="list-style-type: none"> • Relevant parts are sent for engineering or machining work to be completed. 	<ul style="list-style-type: none"> • Send relevant parts for engineering or machining work to be completed.
<ul style="list-style-type: none"> • Relevant parts/components for assembly are received back from engineering and machining. 	<ul style="list-style-type: none"> • Receive relevant parts/components back from engineering and machining for assembly.
<ul style="list-style-type: none"> • Component checking and testing is explained and completed. 	<ul style="list-style-type: none"> • Explain and complete component checking and testing.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Practical assignment on verifying of serviceability and the appropriate tools and equipment to be used. 	

SUBJECT OUTCOME	
3.2 Source reconditioned and/or replacement parts/components. <i>Range: Cylinder head, cylinder block, crank shaft, camshaft, piston and conrods, also all other components enabling interactions of main components.</i>	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Measurement of components is obtained from engineering or manufacturer's specifications. 	<ul style="list-style-type: none"> • Obtain measurement of components as prescribed by engineering or manufacturer's specifications.
<ul style="list-style-type: none"> • Additional parts/components for assembling are obtained. 	<ul style="list-style-type: none"> • Obtain additional parts/components needed for assembling.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Practical assignment on verifying of serviceability and the appropriate tools and equipment to be used. 	

SUBJECT OUTCOME	
3.3 Assemble according to manufacturer's specifications/procedures. <i>Range: Cylinder head, cylinder block, crank shaft, camshaft, piston and conrods, also all other components enabling interactions of main components.</i>	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Specifications and procedures on assembling of required components are determined from the appropriate manual. 	<ul style="list-style-type: none"> • Determine specifications and procedures on assembling of required components according to the appropriate manual.
<ul style="list-style-type: none"> • The correct placement of components is determined. 	<ul style="list-style-type: none"> • Determine the correct placement of components.
<ul style="list-style-type: none"> • Combined components are carefully assembled to prevent faulty procedures. 	<ul style="list-style-type: none"> • Carefully assemble combined components to prevent faulty procedures.
<ul style="list-style-type: none"> • Final checking on all specifications is completed after assembling. 	<ul style="list-style-type: none"> • Complete final checking on all specifications after assembling.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Practical assignment on verifying of serviceability and the appropriate tools and equipment to be used. 	

Topic 4: Checking and adjusting of steering geometry

SUBJECT OUTCOME	
4.1 Plan and prepare for checking and adjusting of steering geometry.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Specifications and equipment required to complete repairs and assembling are determined from the appropriate manual. 	<ul style="list-style-type: none"> Determine specifications and equipment required to complete repairs and assembling according to the appropriate manual.
<ul style="list-style-type: none"> The concept of run flat tires is explained. 	<ul style="list-style-type: none"> Explain the concept of run flat tires.
<ul style="list-style-type: none"> Road safety aspects for lifting of vehicles are described. 	<ul style="list-style-type: none"> Describe road safety aspects concerning lifting of vehicles.
<ul style="list-style-type: none"> Lifting procedures, wheel removal and refitting of a wheel is explained. 	<ul style="list-style-type: none"> Explain lifting procedures, wheel removal and refitting of a wheel.
<ul style="list-style-type: none"> The pre-checks to perform for removal and fitting are explained. 	<ul style="list-style-type: none"> Explain the pre-checks to perform for removal and fitting.
<ul style="list-style-type: none"> Safe and unsafe positioning of a vehicle is differentiated. 	<ul style="list-style-type: none"> Differentiate between safe and unsafe positioning of a vehicle.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Theoretical assessment: <ul style="list-style-type: none"> Written test. Practical assessment: <ul style="list-style-type: none"> Student conducts a practical to plan and prepare for checking and adjusting of steering geometry. 	

SUBJECT OUTCOME	
4.2 Explain and perform checks on other components relating to checking and adjusting steering geometry.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Unusual tyre wear patterns is observed and recorded. 	<ul style="list-style-type: none"> Observe and record unusual tyre wear patterns.
<ul style="list-style-type: none"> Tyre air pressure is checked and adjusted. 	<ul style="list-style-type: none"> Check and adjust tyre air pressure
<ul style="list-style-type: none"> Wheel and tyre vibration problems are identified and repaired. 	<ul style="list-style-type: none"> Diagnose wheel and tyre vibration problems and repair it.
<ul style="list-style-type: none"> Nut torque settings according to factory recommendations are checked and adjusted accordingly. 	<ul style="list-style-type: none"> Check nut torque settings according to factory recommendations and adjust if necessary.
<ul style="list-style-type: none"> A wheel and tyre assembly balance is performed. 	<ul style="list-style-type: none"> Perform a wheel and tyre assembly balance.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Theoretical assessment <ul style="list-style-type: none"> Written test Practical assessment: <ul style="list-style-type: none"> Student conducts a practical to plan and prepare for checking and adjusting of steering geometry. 	

SUBJECT OUTCOME	
4.3 Perform pre-checks and analyse information.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Supplemental Restraint Systems (SRS) are disabled to prevent activation during adjustment on steering geometry. 	<ul style="list-style-type: none"> Disable Supplemental Restraint Systems (SRS) to prevent possible activation during adjustment on steering geometry.
<ul style="list-style-type: none"> Steering column noises and binding problems are diagnosed. 	<ul style="list-style-type: none"> Diagnose steering column noises and binding problems.
<ul style="list-style-type: none"> Manual steering gear and adjustment is diagnosed. 	<ul style="list-style-type: none"> Diagnose manual steering gear and adjustment.
<ul style="list-style-type: none"> Manual rack and pinion steering gear and adjustment is diagnosed. 	<ul style="list-style-type: none"> Diagnose manual rack and pinion steering gear and adjustment.
<ul style="list-style-type: none"> Quality procedures are applied while checking and adjusting steering geometry. 	<ul style="list-style-type: none"> Apply quality procedures while checking and adjusting steering geometry.
<ul style="list-style-type: none"> Appropriate safety procedures are applied while checking and adjusting steering geometry. <i>Range: Work habits, Material Safety Data Sheets (MSDS), Environmental Protection Agency (EPA) Regulations, Occupational Safety Health Administration (OSHA) regulations, Fire extinguishers and exits.</i> 	<ul style="list-style-type: none"> Apply safety procedures while checking and adjusting steering geometry. <i>Range: Work habits, Material Safety Data Sheets (MSDS), Environmental Protection Agency (EPA) Regulations, Occupational Safety Health Administration (OSHA) regulations, Fire extinguishers and exits.</i>
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Theoretical assessment <ul style="list-style-type: none"> Written test Practical assessment: <ul style="list-style-type: none"> Student conducts a practical to plan and prepare for checking and adjusting of steering geometry. 	

SUBJECT OUTCOME	
4.4 Explain and perform wheel alignment and adjustment.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Wheel alignment theory is explained. 	<ul style="list-style-type: none"> Explain wheel alignment theory.
<ul style="list-style-type: none"> Vehicle steering problem diagnosis and repairs is explained and performed. 	<ul style="list-style-type: none"> Explain and perform vehicle steering problem diagnosis and repairs.
<ul style="list-style-type: none"> Checking of caster and camber angles to determine possible adjustments is explained and performed. 	<ul style="list-style-type: none"> Explain and perform checking of caster and camber angles to determine possible adjustments.
<ul style="list-style-type: none"> Checking of toe in and toe out to determine possible adjustments is explained. 	<ul style="list-style-type: none"> Explain and perform checking of toe in and toe out to determine possible adjustments.
<ul style="list-style-type: none"> Steering axis inclination (SAI) and King Pin Inclination (KPI) for checking and repairs is explained and performed. 	<ul style="list-style-type: none"> Explain and perform steering axis inclination (SAI) and King Pin Inclination (KPI) for checking and repairs.
ASSESSMENT TASKS OR ACTIVITIES	
<p>Theoretical assessment</p> <ul style="list-style-type: none"> Written test <p>Practical assessment</p> <ul style="list-style-type: none"> Student conducts a practical to plan and prepare for checking and adjusting of steering geometry 	

Topic 5: The fundamentals of mechanical fuel injection systems

SUBJECT OUTCOME	
5.1 Explain the basic functions of the diesel fuel system.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Specifications and procedures on mechanical fuel injection systems are determined from the appropriate manual. <i>Range: Timing marks and operating pressures.</i> 	<ul style="list-style-type: none"> Determine specifications and procedures on mechanical fuel injection systems according to the appropriate manual. <i>Range: Timing marks and operating pressures.</i>
<ul style="list-style-type: none"> Components of a basic fuel injection system are identified. 	<ul style="list-style-type: none"> Identify components of a basic fuel injection system.
<ul style="list-style-type: none"> The functions of the components are explained. 	<ul style="list-style-type: none"> Explain the functions of the components.
<ul style="list-style-type: none"> Crucial parts/components which need special attention during inspection of fuel injection systems are selected and the importance of these parts is indicated. 	<ul style="list-style-type: none"> Select crucial parts/components which need special attention during inspection of fuel injection systems and indicate the importance of these parts.
<ul style="list-style-type: none"> Checking and testing of components is explained. 	<ul style="list-style-type: none"> Explain checking and testing of components.
<ul style="list-style-type: none"> Special tools for testing or working on a fuel injection system are identified. 	<ul style="list-style-type: none"> Identify special tools for testing or working on a fuel injection system.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Theoretical assessment: <ul style="list-style-type: none"> Written test on fundamentals of mechanical fuel injection systems. 	

SUBJECT OUTCOME	
5.2 Describe diesel fuel classifications.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Different diesel fuel grades used in industry is described. 	<ul style="list-style-type: none"> Describe different diesel fuel grades used in industry.
<ul style="list-style-type: none"> Different fuel additives are described. 	<ul style="list-style-type: none"> Describe different fuel additives.
<ul style="list-style-type: none"> Diesel ignition abilities are explained. 	<ul style="list-style-type: none"> Explain diesel ignition abilities.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Theoretical assessment: <ul style="list-style-type: none"> Written test on fundamentals of mechanical fuel injection systems. 	

SUBJECT OUTCOME	
5.3 Explain the importance and uses of different fuel filters and systems.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Different fuel replacement filters are identified. <i>Range: In-Line Fuel Filters, In-Carburetor Fuel Filters, Fuel-Injector Filters.</i> 	<ul style="list-style-type: none"> Identify different fuel replacement filters. <i>Range: In-Line Fuel Filters, In-Carburetor Fuel Filters, Fuel-Injector Filters.</i>
<ul style="list-style-type: none"> Different materials used for outer casings are identified. 	<ul style="list-style-type: none"> Identify different materials used for outer casings.
<ul style="list-style-type: none"> Different pressures in fuel systems are explained. 	<ul style="list-style-type: none"> Explain different pressures in fuel systems.
<ul style="list-style-type: none"> The different uses of fuel filters are described. 	<ul style="list-style-type: none"> Describe the different uses of fuel filters.
<ul style="list-style-type: none"> The importance of service intervals on fuel filters is explained. 	<ul style="list-style-type: none"> Explain the importance of service intervals on fuel filters.
<ul style="list-style-type: none"> Different fuel systems in small medium and heavy duty vehicles are identified <i>Range: Caterpillar Fuel Systems, Detroit Fuel Systems, Cummins Fuel Systems, Stan dyne Fuel Systems, Bosch Systems</i> 	<ul style="list-style-type: none"> Identify different fuel systems in small medium and heavy duty vehicles. <i>Range: Caterpillar Fuel Systems, Detroit Fuel Systems, Cummins Fuel Systems, Stan dyne Fuel Systems, Bosch Systems</i>

ASSESSMENT TASKS OR ACTIVITIES
Theoretical assessment <ul style="list-style-type: none"> Written test on fundamentals of mechanical fuel injection systems

Topic 6: Performing a basic condition test on a vehicle

SUBJECT OUTCOME	
6.1 Describe basic condition test procedures	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Various retardation systems are described. <i>Range: all human and vehicle requirements according to roadworthy specifications.</i> 	<ul style="list-style-type: none"> Describe various retardation systems. <i>Range: all human and vehicle requirements according to roadworthy specifications.</i>
<ul style="list-style-type: none"> Criteria used when performing a condition test are described. <i>Range: inside criteria, outside criteria.</i> 	<ul style="list-style-type: none"> Describe criteria to use when performing a condition test. <i>Range: inside criteria, outside criteria.</i>
<ul style="list-style-type: none"> Test procedures used for condition tests are described test equipment. <i>Range: bumper to bumper.</i> 	<ul style="list-style-type: none"> Describe test procedures to use when performing a condition test. <i>Range: bumper to bumper.</i>
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Theoretical assessment: <ul style="list-style-type: none"> Written test Practical assessment: <ul style="list-style-type: none"> Student conducts a practical on performing a basic condition test on a vehicle and writes and submits a report. 	

SUBJECT OUTCOME	
6.2 Use test equipment to perform assessment of components.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Various retardation systems are described. 	<ul style="list-style-type: none"> Clean components for inspection.
<ul style="list-style-type: none"> Various retardation systems are assessed using test equipment. <i>Range: disc brakes, drum brakes, hydraulic and air brake systems.</i> 	<ul style="list-style-type: none"> Use test equipment and assess various retardation systems. <i>Range: disc brakes, drum brakes, hydraulic and air brake systems.</i>
<ul style="list-style-type: none"> A vehicle condition test is performed using test equipment <i>Range: inside criteria, outside criteria, bumper to bumper</i> 	<ul style="list-style-type: none"> Use test equipment and perform a vehicle condition test <i>Range: inside criteria, outside criteria, bumper to bumper</i>
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Theoretical assessment: <ul style="list-style-type: none"> Written test. Practical assessment: <ul style="list-style-type: none"> Student conducts a practical on performing a basic condition test on a vehicle and writes and submits a report. 	

SUBJECT OUTCOME	
6.3 Compare outcomes of assessment with manufacturer's specifications.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Comparison procedures to follow are chosen and the decision is motivated. 	<ul style="list-style-type: none"> • Choose comparison procedures to follow and motivate the decision.
<ul style="list-style-type: none"> • A suitable test criterion is selected to compare the outcomes. 	<ul style="list-style-type: none"> • Select suitable test criteria to compare the outcomes.
<ul style="list-style-type: none"> • Findings/results of assessment are explained according to selected criteria. 	<ul style="list-style-type: none"> • Explain findings/results of assessment according to selected criteria.
<ul style="list-style-type: none"> • Findings/results of assessment are explained according to selected criteria. 	<ul style="list-style-type: none"> • Explain findings/results of assessment according to selected criteria.
<ul style="list-style-type: none"> • Findings/results of conditions are interpreted after comparison. 	<ul style="list-style-type: none"> • Interpret findings/results of conditions after comparison.
<ul style="list-style-type: none"> • A judgement call is made on the overall condition of the vehicle. 	<ul style="list-style-type: none"> • Make a judgement call on the overall condition of the vehicle.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test • Practical assessment: <ul style="list-style-type: none"> ▪ Student conducts a practical on performing a basic condition test on a vehicle and writes and submits a report. 	

SUBJECT OUTCOME	
6.4 Compile and submit a condition report.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Report writing and submission procedures are described. 	<ul style="list-style-type: none"> • Describe report writing and submission procedures.
<ul style="list-style-type: none"> • An accurate condition report including all technical specifications is written. 	<ul style="list-style-type: none"> • Write an accurate condition report including all technical specifications.
<ul style="list-style-type: none"> • The report is submitted to the workshop manager/facilitator. 	<ul style="list-style-type: none"> • Submit the report to the workshop manager/facilitator.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Student conducts a practical on performing a basic condition test on a vehicle and writes and submits a report. 	

Topic 7: Services and repairs on conventional electrical systems

SUBJECT OUTCOME	
7.1 Explain and illustrate basic electrical theories and components.	
<i>Range: Battery, ignition switch, high voltage coil, ballast resistor, condenser.</i>	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Basic electrical safety aspects are explained. 	<ul style="list-style-type: none"> • Explain basic electrical safety aspects.
<ul style="list-style-type: none"> • Ignition wiring and circuit diagrams are drawn and explained. 	<ul style="list-style-type: none"> • Explain and draw ignition wiring and circuit diagrams.
<ul style="list-style-type: none"> • The working of an automotive battery is explained. 	<ul style="list-style-type: none"> • Explain the working of an automotive battery.
<ul style="list-style-type: none"> • A battery diagnosis and service is performed. 	<ul style="list-style-type: none"> • Perform a battery diagnosis and service.
<ul style="list-style-type: none"> • Basic electrical troubleshooting and service is described 	<ul style="list-style-type: none"> • Describe basic electrical troubleshooting and service.

ASSESSMENT TASKS OR ACTIVITIES
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Student conducts a service and repairs on conventional electrical systems.

SUBJECT OUTCOME	
7.2 Explain and use electrical and electronic components.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • The inspection and testing of electronic and electrical components is described. <i>Range: Direct current starting system, charging system.</i> 	<ul style="list-style-type: none"> • Describe the inspection and testing of electronic and electrical components. <i>Range: Direct current starting system, charging system.</i>
<ul style="list-style-type: none"> • The service of electrical components is explained. <i>Range: Direct current starting system, charging system.</i> 	<ul style="list-style-type: none"> • Explain how to service electrical components. <i>Range: Direct current starting system, charging system.</i>
<ul style="list-style-type: none"> • A complete service on electrical components is performed. <i>Range: Direct current starting system, charging system</i> 	<ul style="list-style-type: none"> • Perform a complete service on electrical components. <i>Range: Direct current starting system, charging system.</i>
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test. • Practical assessment <ul style="list-style-type: none"> ▪ Student conducts a service and repairs on conventional electrical systems. 	

SUBJECT OUTCOME	
7.3 Describe and repair electrical circuit problems.	
<i>Range: Lighting circuit, cluster and instrumentation.</i>	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • Inspection on lighting circuits is described and performed. 	<ul style="list-style-type: none"> • Describe and perform inspection on lighting circuits.
<ul style="list-style-type: none"> • Minor repairs on lighting circuits is described and performed. 	<ul style="list-style-type: none"> • Describe and perform minor repairs on lighting circuits.
<ul style="list-style-type: none"> • Different cluster Instrumentations are inspected and repaired. <i>Range: Conventional Analogy Instrumentation, Indicator Lights, and Warning Devices.</i> 	<ul style="list-style-type: none"> • Inspect and repair different cluster Instrumentations. <i>Range: Conventional Analogy Instrumentation, Indicator Lights, and Warning Devices.</i>
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment. <ul style="list-style-type: none"> ▪ Written test. • Practical assessment: <ul style="list-style-type: none"> ▪ Student conducts a service and repairs on conventional electrical systems. 	

Topic 8: Operation of petrol systems

SUBJECT OUTCOME	
8.1 Explain petrol as an automotive fuel.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> The types and grades of petrol available on the market are indicated. 	<ul style="list-style-type: none"> Differentiate the types and grades of petrol available on the market.
<ul style="list-style-type: none"> Different additives used in petrol currently are described. 	<ul style="list-style-type: none"> Describe different additives used in petrol currently.
<ul style="list-style-type: none"> The theory of air and fuel mixture to form a gas is explained. 	<ul style="list-style-type: none"> Explain the theory of air and fuel mixture to form a gas.
<ul style="list-style-type: none"> A model is used to describe and demonstrate petrol combustion processes. 	<ul style="list-style-type: none"> Describe and use a model to demonstrate petrol combustion processes.
<ul style="list-style-type: none"> Different components on the Electronic Fuel Injection (EFI) System are identified. 	<ul style="list-style-type: none"> Identify different components on the Electronic Fuel Injection (EFI) system.
<ul style="list-style-type: none"> The functions and operations of all Electronic Fuel Injection (EFI) components are described. 	<ul style="list-style-type: none"> Describe the functions and operations of all Electronic Fuel Injection (EFI) components.
<ul style="list-style-type: none"> Safety procedures for working on Electronic Fuel Injection (EFI) components are explained. 	<ul style="list-style-type: none"> Explain safety procedures to use when working on Electronic Fuel Injection (EFI) components.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Theoretical assessment: <ul style="list-style-type: none"> Written test on operation of petrol systems. 	

Topic 9: Operation of automotive carburettors

SUBJECT OUTCOME	
9.1 Explain the operation of automotive carburettors	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> Single and twin choke carburettors are differentiated. 	<ul style="list-style-type: none"> Differentiate between single and twin choke carburettors.
<ul style="list-style-type: none"> The operation of single and twin choke carburettors is explained. 	<ul style="list-style-type: none"> Explain the operation of single and twin choke carburettors.
<ul style="list-style-type: none"> Different carburetor circuits used at different throttle positions is explained. 	<ul style="list-style-type: none"> Explain different carburetor circuits used at different throttle positions.
<ul style="list-style-type: none"> Different choke mechanisms are described. 	<ul style="list-style-type: none"> Describe different choke mechanisms.
<ul style="list-style-type: none"> The use of a hand vacuum pump is described. 	<ul style="list-style-type: none"> Describe the use of a hand vacuum pump.
<ul style="list-style-type: none"> Mixture adjustments to improve emission levels is explained 	<ul style="list-style-type: none"> Explain mixture adjustments to improve emission levels.
<ul style="list-style-type: none"> Typical carburetor faults are listed and possible solutions provided. 	<ul style="list-style-type: none"> List typical carburetor faults and provide possible solutions.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> Theoretical assessment: <ul style="list-style-type: none"> Written test on automotive carburettors. Practical assessment: <ul style="list-style-type: none"> Student conducts selected practical tasks on automotive carburettors. 	

SUBJECT OUTCOME	
9.2 Perform selected tasks on automotive carburettors.	
ASSESSMENT STANDARD	LEARNING OUTCOME
<ul style="list-style-type: none"> • A model is used to demonstrate different carburetor circuits at different throttle positions. 	<ul style="list-style-type: none"> • Use a model to demonstrate different carburetor circuits at different throttle positions.
<ul style="list-style-type: none"> • A gas analysis test is completed. 	<ul style="list-style-type: none"> • Complete a gas analysis test.
<ul style="list-style-type: none"> • A hand vacuum pump is used to check vacuum controls. 	<ul style="list-style-type: none"> • Use a hand vacuum pump to check vacuum controls.
<ul style="list-style-type: none"> • A basic carburetor service check is completed. 	<ul style="list-style-type: none"> • Complete a basic carburetor service check.
<ul style="list-style-type: none"> • A faultfinding check is completed on different carburettors and possible solutions for repairs are provided. 	<ul style="list-style-type: none"> • Complete a faultfinding check on different carburettors and provide possible solutions for repairs.
ASSESSMENT TASKS OR ACTIVITIES	
<ul style="list-style-type: none"> • Theoretical assessment: <ul style="list-style-type: none"> ▪ Written test on automotive carburettors. • Practical assessment: <ul style="list-style-type: none"> ▪ Student conducts selected practical tasks on automotive carburettors. 	

4 SPECIFICATIONS FOR EXTERNAL ASSESSMENT IN AUTOMOTIVE REPAIR AND MAINTENANCE - LEVEL 3

4.1 Integrated summative assessment task (ISAT)

A compulsory component of the external assessment (ESASS) is the **integrated summative assessment task (ISAT)**. The integrated summative assessment task (ISAT) draws on the students' cumulative learning achieved throughout the year. The task requires **integrated application of competence** and is executed and recorded in compliance with assessment conditions.

Two approaches to the integrated summative assessment task (ISAT) may be as follows:

- The students are assigned a task at the beginning of the year which they will have to complete in phases throughout the year to obtain an assessment mark. A final assessment is made at the end of the year when the task is completed.

OR

- Students achieve the competencies throughout the year but the competencies are assessed cumulatively in a single assessment or examination session at the end of the year.

The integrated summative assessment task (ISAT) is set by an externally appointed examiner and is conveyed to colleges in the first quarter of the year.

The integrated assessment approach enables students to be assessed in more than one subject with the same integrated summative assessment task (ISAT).

4.2 National Examination

A National Examination is conducted annually in October or November by means of a paper(s) set and moderated externally. The following distribution of cognitive application is suggested.

LEVEL 3	KNOWLEDGE AND COMPREHENSION	APPLICATION	ANALYSIS, SYNTHESIS AND EVALUATION
	35%	40%	25%