VEHICLE TECHNICIAN ACCREDITATION ASSESSMENT

TRAINER GUIDE

Date: 31/03/2025
Version: V1.1

Skills & Education Group Awards

Contents

Overview Document

The purpose of this document is to provide information which will enable training providers to guarantee that they have the correct resources to successfully deliver the Vehicle Technician Accredited Assessment. In addition to this, it is a useful point of reference when answering queries from prospective candidates that wish to complete the assessment.

The SEG Awards qualification code is U0008.

Introduction

The SEG Awards Vehicle Technician Accredited Assessment (VTAA) has been developed in collaboration with the Driver and Vehicle Standards Agency (DVSA).

Achievement of the VTAA enables motor vehicle technicians who do not hold a formal qualification and who have worked in their roles for four or more years to prove their capabilities at Level 3. Achievement enables a technician to meet the entry requirements to become an MOT Tester for class 3, 4, 5 or 7 vehicles. Gaining status as an MOT Tester will be subject to DVSA requirements. The DVSA can withdraw Tester Status if conditions are not met.

The VTAA is a lifetime achievement, which means that it will not expire, and holders will be considered professionally competent for the rest of their lives.
The VTAA is available to be delivered and assessed as a complete accreditation or as individual modules contributing to a full accreditation.

General Information

Aims

The Vehicle Technician Accredited Assessment aims to:

- demonstrate technicians have the knowledge and skills expected of someone working at Level 3
- enable technicians without a Level 3 qualification to enroll on an MOT Tester qualifications in order for them to become qualified to conduct MOTs
- demonstrate that a technician meets the Light Vehicle Motor Vehicle Level 3 National Occupational Standards.

Where a learner has not completed all of the required units as part of the VTAA course, learners/Training Providers cannot add separate unit accreditations from the VTAA Modular course in order to claim a VTAA certificate.

Target Group

The Vehicle Technician Accredited Assessment acts as an equivalent accreditation for Technicians who wish to gain the DVSA Certificate of Competence for MOT Testers but have no formal Level 3 Motor Vehicle qualification. All of the content within the assessments has been mapped to the Level 3 Light Vehicle National Occupational Standards.

Entry Requirements

There are no formal requirements for entry to the VTAA however, as the VTAA is an assessment of a motor vehicle technician's knowledge and skills it is expected that they have worked in their roles for four or more years to demonstrate capabilities at Level 3. Evidence to demonstrate four years' experience could be provided through items such as former wage slips/ technician declaration or CV. This list is not exhaustive. SEG Awards expects centres to recruit with integrity.

Progression Opportunities

The VTAA is a requirement for technicians without a Level 3 qualification who wish gain entry on to the SEG Awards MOT Tester Qualification

- Level 2 Award in MOT Testing (Classes 4 and 7) (601/8935/6)

Reasonable Adjustments

Adjustments to assessment arrangements are made on the basis of the individual needs of candidates. Technicians must be told that if they are planning to progress to the Level 2 Awards in MOT Testing then reasonable adjustments are restricted within those qualifications. Level 2 Awards in MOT Testing (Class 1 and 2) and Level 2 Awards in MOT Testing (Class 4 and 7) do allow readers or scribes for the assessment.
As learners will need to access DVSA material during their normal testing activities, scribes or readers will be allowed during the invigilated qualification assessment

Resource Requirements

The assessment requires a technician to complete practical tasks and online test(s). To provide the assessment, trainers and technicians will need to be able to access the following:

Online knowledge tests

- access to IT equipment with BTL secure client installed
- test environment that meets the requirements
- invigilators

Practical tasks

- well-lit workshop area
- vehicles, rigs, electric circuits appropriate to the task
- workshop tools and equipment
- PPE

SEG Awards Support Resources

Detail of the resource requirements for each practical task is given in Appendix 2

These resources are available, from SEG Awards' secure on-line registration system (ORS), in a document entitled 'Vehicle Technician Accredited Assessment (VTAA) Practical Tasks Resources' and in the Appendix at the end of this document. The resources support the following practical tasks:

Module	Task ID	Task Title
Suspension, Steering Wheels and Tyres	Sus-01	Tyre Wear
Electrical	Ele-09	Oscilloscope Waveform ID
Emissions	Emi-03	Emission Test Sample

Trainer Requirements

Training Providers must have trainers with sufficient knowledge and skills in the subject matter being delivered. Trainers must have achieved a Level 3 Motor Vehicle related qualification or any other equivalent accreditation.

Assessor Requirements

Assessors are responsible for the validity, reliability and authenticity of evidence. Assessors therefore need to have a thorough understanding of assessment and quality assurance processes, as well as having an in-depth technical competence relating to the VTAA practical skills.

Internal Quality Assurer (IQA) Requirements

The primary responsibility of the IQA is to assure the quality and consistency of assessments by the assessors for whom they are responsible. IQAs therefore need to have a thorough understanding of quality assurance and assessment practices, as well as technical competence related to the VTAA that they are internally quality assuring. IQAs will be responsible for, and accountable for consistency, quality and reliability of evidence and assessors. It will be the responsibility of the approved centre to select and appoint IQAs.

To be an approved IQA, the person must:

- have in-depth knowledge of the VTAA requirements
- be occupationally aware of the Motor Vehicle sector
- be approved by SEG Awards to carry out internal quality assurance for the SEG Awards Vehicle Technician Accredited Assessment
- demonstrate knowledge and understanding of the quality assurance processes required by the centre and SEG Awards

Approval of IQAs can be removed. IQAs cannot verify the VTAA if they are not approved by SEG Awards, or have had their approval removed. Centres must use the assessments set by SEG Awards.

Assessment Structure and Content

Structure

- (U0008 Vehicle Technician Accredited Assessment)

Area	Complete Assessment U0008 VTAA	
	Practical Assessments	Online Test
Brakes	4 tasks	50 MCQs*
Suspension	4 tasks	
Steering, Wheels & Tyres		
Emissions	4 tasks	
Electrics	4 tasks	

*MCQs = Multiple Choice Questions

Overview of the Assessments

The purpose of the assessments is to determine whether a technician has the required level of practical skills and knowledge which is needed in order to meet the pre-requisites for MOT Testing.
To complete the VTAA, technicians will need to complete practical assessments in each of the following areas:

- brakes
- suspension, steering, wheels and tyres
- emissions
- electrics

In total, a technician will complete 4 practical tasks for **each** area. Each practical task will take 10 minutes to complete and has its own resource documents which include:

- guidance and instruction for setting the task up

- a marking sheet to be completed and submitted to SEG Awards when all the practical assessments have been completed.

Technicians must also complete an online knowledge assessment consisting of 10 questions for **each** of the following areas:

- brakes
- suspension
- steering, Wheels and Tyres
- emissions
- electrics

The online test presents multiple choice questions for each area and there are 50 questions in total. The duration of the test is 75 minutes and technicians must score **60% overall.**

Practical Tasks

Within each module, the practical tasks have been grouped into 4 sub-groups. The technician **must** successfully complete 1 task from each sub-group. Details of the subgroups are given on the next page.

Technicians must meet all of the requirements set in each task to pass the assessment. Each task has 2 resource documents. The first document is for the trainer and provides guidance and instructions on how to set up the task. The second document is for the technician and explains what they need to do for each task. The technician will use this document to record their responses to the task

Sub-Group	Suspension, Steering, Wheels & Tyres Technician must complete 1 task from each sub-group, totally 4 tasks	Brakes Technician must complete 1 task from each sub-group, totally 4 tasks	Emissions Technician must complete 1 task from each sub-group, totally 4 tasks	Electrical Technician must complete 1 task from each sub-group, totally 4 tasks
A	Tyre Wear	Disc Measurement	Live Data – Analyse Data	Electrical wiring fault (1)
B	Inspection of vehicle front suspension (1)	Brake servo	Emission tester	Resistance check
	Inspection of vehicle front suspension (2)	ABS Fault (1)	Emission test sample	Circuit produce – relay
	Steering	ABS Fault (2)	Petrol injector fault	Circuit relay fault
C	Anti-roll bar links/bushes	Brake fluid	O2 Sensor – Data (1)	Fault code diagnosis
	Inspection of vehicle rear suspension	Brake pipe fabrication	O2 Sensor – Data (2)	CAN network fault
	Suspension component inspection	Brake pipe/hosepipe inspection	Scan tool data	Electrical wiring fault (2)
D	Steering mechanism – Vague steering	Disc caliper	Fuel system	Oscilloscope measurement
	Steering mechanism – Stiff steering	Handbrake – Not functioning	Engine non-start (1)	Oscilloscope waveform ID
	Steering mechanism check	Drum brake inefficient	Engine non-start (2)	Wiring diagram identification

External Quality Assurance

SEG Awards will carry out periodic audit inspections on centres approved to deliver the Vehicle Technician Accredited Assessment. This will be to ensure that the integrity of the assessments are upheld and that centres have the relevant processes and procedures in place.

Audit Inspection

An SEG Awards auditor will contact the Centre to arrange a date for an initial inspection. Centres will agree a date with the Auditor. The agreed date needs to be on a day when assessments are taking place.

The VTAA self-declaration form will be validated at the audit. If the audit identifies any issues with processes, procedures and/or resources then approval and certification may be withdrawn.

The audit report will be sent to SEG Awards by the auditor. If any compliance issues are identified then these will be referred to the SEG Awards Compliance Team.

After the initial inspection all approved centres will be subject to an annual audit. Additional or earlier audits will be carried out where centres have 150+ registrations in a year.

Please Note:

- SEG Awards expects that a practical assessment and/or an online assessment are taking place on the agreed audit date.
- Failure to advise the auditor of changes before the audit date could result in certification being put on hold until SEG Awards is confident that all assessment standards are being complied with.
- If the auditor does not observe a practical assessment or an online assessment on the date agreed an additional audit will be arranged and a charge will be applicable.

Appendix 1: Practical Tasks

Practical Tasks

For each module, candidates should successfully complete one practical task from each sub-group.

Suspension, Steering, Wheels & Tyres: Sub-Group A

Sub Group	Suspension, Steering, Wheels & Tyres Technician must complete 1 task from each sub-group
A	Tyre Wear
B	Inspection of vehicle front suspension (1)
	Inspection of vehicle front suspension (2)
	Steering
C	Anti-roll bar links/bushes
	Inspection of vehicle rear suspension
	Suspension component inspection
D	Steering mechanism – Vague steering
	Steering mechanism – Stiff steering
	Steering mechanism check

Trainer Guidance: Suspension, Steering, Wheels & Tyres 01

Module	Suspension, Steering, Wheels & Tyres
Task	Sus – 01
Task Title	Tyre Wear
Time – mins	10
NOS ref	IMILV08/13

Technician Instructions - Section 1	Inspect two (O/S/F & N/S/F) wheel and tyre assemblies to include their condition, specification and position on the vehicle. Record the results and report any defects.
	O/S/F tyre size:
	O/S/F wheel / tyre tread depth: Inner: mm centre: mm outer: mm
	O/S/F wheel / tyre assembly fault(s):
	N/S/F tyre size:
	N/S/F wheel / tyre tread depth: Inner: mm centre: mm outer: mm
	N/S/F wheel / tyre assembly fault(s):
Section 1 Conclusion	Identify driver symptoms caused by the defects:
Technician Instructions- Section 2	From the illustrations provided, diagnose the defects which have caused the tyre wear. Record your answers in the boxes below:
A	
B	
C	
Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Two physical wheel assemblies that would cause the vehicle to pull in one direction as identified by the drivers' symptom (i.e. diameter/aspect ratio/tyre construction). › Illustration of 3 different tyre wear characteristics (selected from the options indicated) to be laid out to the technician. › Laminate the illustrations make up a document set. › Clearly identify 'each' illustration with the letter.

Vehicle/rig/other	No vehicle or rig needed
Tools and equipment list	Two wheel and tyre assemblies Illustrations laminated and labelled Technician marking sheet

Marking of task

Correct answers	**Physical tyre with the following faults:**	**Incorrect tyre size between OS & NS tyre (could be written on the tyre wall)**
Physical tyres	Physical tyre tread depth (+/- 1mm) to OS & NS	
Illustrations		Answers: 1. Under inflation 2. 2. Over inflation 3. 3. Normal tyre wear 4. 4. Toe out – 5. excessive 6. negative camber 7. 5. Toe in – 8. excessive 9. positive camber
Illustrations		
A	PICTURE REQUIRED	
B	PICTURE REQUIRED	
C	PICTURE REQUIRED	

Required to pass task
100%

Module Suspension, Steering, Wheels & Tyres
Task Sus – 01
Task Title Tyre Wear
Time - mins 10 Minutes

Technician Instructions - Section 1	Inspect two (O/S/F & N/S/F) wheel and tyre assemblies to include their condition, specification and position on the vehicle. Record the results and report any defects.	**OFFICIAL USE ONLY**
	O/S/F tyre size:	
	O/S/F wheel / tyre tread depth: Inner mm: Centre mm: Outer mm	
	O/S/F wheel / tyre assembly fault(s)	
	N/S/F tyre size:	
	N/S/F wheel / tyre tread depth: Inner mm: Centre mm: Outer mm	
	N/S/F wheel / tyre assembly fault(s)	
Section 1 Conclusion	Identify driver symptoms caused by the defects:	
Technician Instructions - Section 2	From the illustrations provided, diagnose the defects which have caused the tyre wear. Record your answers in the boxes below:	
	Image :	
	Image :	
	Image :	
Assessor signature		
Date of Completion		

Technician Name:

Date:

Suspension, Steering, Wheels & Tyres: Sub-Group B

Sub Group	Suspension, Steering, Wheels & Tyres Technician must complete 1 task from each sub-group
A	Tyre Wear
B	Inspection of vehicle front suspension (1)
	Inspection of vehicle front suspension (2)
	Steering
C	Anti-roll bar links/bushes
	Inspection of vehicle rear suspension
	Suspension component inspection
D	Steering mechanism – Vague steering
	Steering mechanism – Stiff steering
	Steering mechanism check

Trainer Guidance: Suspension, Steering, Wheels & Tyres 02

Module	Suspension, Steering, Wheels & Tyres
Task	Sus – 02
Task Title	Inspection of Vehicle Front Suspension (1)
Time – mins	10
NOS ref	IMILV08

Technician Instructions	Inspect the vehicle suspension to O/S and N/S (as indicated by your assessor) and diagnose suspension component(s) that have excessive wear. List the suspension component(s) which have excessive wear:
A	
B	
C	
Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Vehicle/rig/other	Vehicle
Tools and equipment list	Selection of levers - suitable to achieve the outcome of the task Selection of hand tools to suit task Clipboard Inspection lamp PPE

Marking of Task

Correct answers	Correct identification of suspension top mount excessive movement
	Correct use of hand tools
	Correct safe working practices
	Correct PPE used for the replacement of component

Set up of task	Suspension type: Front semi strut/McPherson strut. Vehicle - Front of vehicle not raised and situated on turn plates and capable of being raised. Wheel securely fastened to hub assembly of suspension. Suspension top mount excessive play (more than the recommended play), which may require the top mount to be modified to suit the task.

Required to pass task

100%

Module Suspension, Steering, Wheels & Tyres
Task Sus - 02
Task Title Inspection of Vehicle Front Suspension (1)
Time - mins 10 min

Technician Instructions	Inspect the vehicle suspension to O/S and N/S (as indicated by your assessor) and diagnose suspension component(s) that have excessive wear.	**OFFICIAL USE ONLY**
	A:	
	B:	
	C:	
	Use of hand tools – OFFICE USE ONLY	
	Safe working practices – OFFICE USE ONLY	
	PPE used – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Suspension, Steering, Wheels & Tyres 03

Module	Suspension, Steering, Wheels & Tyres
Task	Sus – 03
Task Title	Inspection of Vehicle Front Suspension (2)
Time – mins	10
NOS ref	IMILV08

Technician Instructions	Inspect the vehicle front suspension for wear to its components. Raise the front of the vehicle and position the front suspension so wear can be detected. Diagnose the suspension ball joint(s) which have wear:
O/S lower:	
N/S lower:	
O/S upper:	
N/S upper:	

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	Vehicle to be situated on a four post lift. Jacking beam capable of raising the vehicle to check the front suspension of the vehicle type chosen. One OS or NS ball joint (upper or lower) to display excessive play.

Vehicle/rig/other	Vehicle with front wishbone type suspension only can be used on this task.

Tools and equipment list	Selection of levers – suitable to achieve the outcome of the task Selection of hand tools to suit task Clipboard Inspection lamp PPE

Marking of task

Correct answers	Correct positioning of the vehicle and suspension to diagnose wear in the ball joint(s).
	Correct ID of ball joint with excessive play.
	Correct use of hand tools.
	Correct safe working practices.
	Correct PPE used for the task.

Required to pass task
100%

Module Suspension, Steering, Wheels & Tyres
Task Sus - 03
Task Title Inspection of Vehicle Front Suspension (2)
Time - mins 10 Minutes

Technician Instructions	Inspect the vehicle front suspension for wear to its components. Raise the front of the vehicle and position the front suspension so wear can be detected. Diagnose the suspension ball joint(s) which have wear:	**OFFICIAL USE ONLY**
	O/S lower:	
	N/S lower:	
	O/S upper:	
	N/ S upper:	
	Correct raising of the vehicle – OFFICE USE ONLY	
	Use of hand tools – OFFICE USE ONLY	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Suspension, Steering, Wheels & Tyres 04

Module	Suspension, Steering, Wheels & Tyres
Task	Sus – 04
Task Title	Steering
Time – mins	10
NOS ref	IMILV08/13

Technician Instructions	Inspect the vehicle steering. The driver has complained of an unusual noise whilst the steering wheel is being turned. Diagnose the fault and the cause.
	Diagnose the steering fault:
	Diagnose the cause:

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.
Set up of task	› Vehicle fitted with 'hydraulic' PAS. › Drain fluid from reservoir leaving a small amount of fluid in reservoir / alternatively restrict the amount of fluid entering the pump through the filter. › Allow easy access to the reservoir. › Vehicle to be set up on a four post ramp and positioned on swivel plates that are fitted to the ramp and used for this assessment. Ensure that these are in the unlocked position. › Loosen of PAS pipe from rack / box to create a leak › Ramp to be fitted / not fitted with jacking beam

Vehicle/rig/other	Vehicle
Tools and equipment list	Selection of hand tools to suit task Clipboard Inspection lamp and well-lit area of workshop PPE

Marking of task

Correct answers	Correct identification of PAS fluid excessively low.
	Correct identification of PAS fluid leak from steering rack/box.
	Correct safe working practices.
	Correct PPE used for the task.

Required to pass task

100%

Module Suspension, Steering, Wheels & Tyres
Task Sus - 04
Task Title Steering
Time - mins 10 Minutes

Technician Instructions	Inspect the vehicle steering. The driver has complained of an unusual noise whilst the steering wheel is being turned. Diagnose the fault and the cause.	**OFFICIAL USE ONLY**
	Diagnose the fault:	
	Diagnose the cause:	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Suspension, Steering, Wheels & Tyres: Sub-Group C

Sub-Group	Suspension, Steering, Wheels & Tyres Technician must complete 1 task from each sub-group
A	Tyre Wear
B	Inspection of vehicle front suspension (1)
	Inspection of vehicle front suspension (2)
	Steering
C	Anti-roll bar links/bushes
	Inspection of vehicle rear suspension
	Suspension component inspection
D	Steering mechanism – Vague steering
	Steering mechanism – Stiff steering
	Steering mechanism check

Trainer Guidance: Suspension, Steering, Wheels & Tyres 05

Module	Suspension, Steering, Wheels & Tyres
Task	Sus – 05
Task Title	Anti-roll bar links / brushes
Time – mins	10
NOS ref	IMILV01

Technician Instructions	Inspect the anti-roll bar (as identified by your assessor) and its associated components. Diagnose and report any faults.
A	
B	
C	

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	Vehicle to be set up on 2/4 post ramp or pit. One of the following faults to be set up on the vehicle: › Heat applied to the roll bar / roll bar link to suspension › D bush missing from anti roll bar clamp › Excessive play to the D bush

Vehicle/rig/other	Vehicle only
Tools and equipment list	Clipboard Inspection lamp PPE

Marking of task

Correct answers	Correct identification of anti-roll bar fault, heat applied to roll bar components.
	Correct identification of anti-roll bar D bush missing from clamp.

Required to pass task
100%

Module	Suspension, Steering, Wheels & Tyres
Task	Sus - 05
Task Title	Anti-roll bar links / bushes
Time - mins	10 Minutes

Technician Instructions	Inspect the anti-roll bar (as identified by your assessor) and its associated components. Diagnose and report any faults.	**OFFICIAL USE ONLY**
	A:	
	B:	
	C:	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Suspension, Steering, Wheels & Tyres 06

Module	Suspension, Steering, Wheels & Tyres
Task	Sus – 06
Task Title	Inspection of Vehicle Rear Suspension
Time – mins	10
NOS ref	IMILV08

Technician Instructions	Inspect the rear suspension for wear to its components. Raise the rear of the vehicle to allow the O/S & N/S suspension components to be inspected. Diagnose and record the components which are worn:
O/S:	
O/S:	
N/S:	
N/S:	

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	Vehicle to be situated on a four post lift. Jacking beam capable of raising the vehicle to check the rear suspension of the vehicle type chosen. Wheel bearing excessive noise / notchy. Rear suspension bush to show excessive movement.

Vehicle/rig/other	Vehicle with rear independent suspension can only be used on this task
Tools and equipment list	Selection of levers - suitable to achieve the outcome of the task Selection of hand tools to suit task Clipboard Inspection lamp PPE

Marking of task

Correct answers	Correct positioning of vehicle and suspension to inspect and detect wear in the components.
	Wheel bearing fault
	Suspension bush fault
	Correct use of hand tools
	Correct safe working practices
	Correct PPE used for task

Required to pass task
100%

Module	Suspension, Steering, Wheels & Tyres
Task	Sus - 06
Task Title	Inspection of Vehicle Rear Suspension
Time - mins	10 Minutes

Technician Instructions	Inspect the rear suspension for wear to its components. Raise the rear of the vehicle to allow the O/S & N/S suspension components to be inspected. Diagnose and record the components which are worn:	**OFFICIAL USE ONLY**
	O/S:	
	O/S:	
	N/S:	
	N/S:	
	Use of hand tools – OFFICE USE ONLY	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Suspension, Steering, Wheels & Tyres 07

Module	Suspension, Steering, Wheels & Tyres
Task	Sus – 07
Task Title	Suspension Component Inspection
Time – mins	10
NOS ref	IMILV08

Technician Instructions	Inspect the suspension strut for wear and faults. Assess the suspension in a position that allows inspection and wear to be detected. Diagnose and record any faults, defects and wear.
A	
B	
C	
D	

Additional information	Note that the task may include one or more faults; only record the faults that you have identified.
	Inform your assessor if you require assistance with the tools and equipment provided.
Set up of task	› McPherson strut to be mounted on a rig that would give access to check the various suspension components › Wheel to be securely mounted (wheel & tyre to be serviceable) › 2 faults ONLY to include at least the following: › Wheel bearing excessive movement

	Broken coil spring Coil spring rubber mount to be incorrectly located

Vehicle/rig/other	Rig only
Tools and equipment list	Selection of levers - suitable to achieve the outcome of the task Selection of hand tools to suit task Clipboard Inspection lamp PPE

Marking of task

Correct answers	Broken coil spring
	Wheel bearing fault
	Coil spring rubber mount incorrectly located
	Correct use of hand tools
	Correct safe working practices
	Correct PPE used for task

Required to pass task
100%

Module	Suspension, Steering, Wheels & Tyres
Task	Sus - 07
Task Title	Suspension Component Inspection
Time - mins	10 Minutes

Technician Instructions	Inspect the suspension strut for wear and faults. Assess the suspension in a position that allows inspection and wear to be detected. Diagnose and record any faults, defects and wear.	**OFFICIAL USE ONLY**
	A:	
	B:	
	C:	
	D:	
	Use of hand tools – OFFICE USE ONLY	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Suspension, Steering, Wheels & Tyres: Sub-Group D

Sub-Group	Suspension, Steering, Wheels & Tyres Technician must complete 1 task from each sub-group
A	Tyre Wear
B	Inspection of vehicle front suspension (1)
	Inspection of vehicle front suspension (2)
	Steering
C	Anti-roll bar links/bushes
	Inspection of vehicle rear suspension
	Suspension component inspection
D	Steering mechanism – Vague steering
	Steering mechanism – Stiff steering
	Steering mechanism check

Trainer Guidance: Suspension, Steering, Wheels & Tyres 08

Module	Suspension, Steering, Wheels & Tyres
Task	Sus – 08
Task Title	Steering Mechanism – Vague Steering
Time – mins	10
NOS ref	IMILV08/13

Technician Instructions	The driver has complained of vagueness to the steering of the vehicle. Inspect the steering mechanism and diagnose any defects. Report on any defects found during the inspection:

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Set up excessive play to one side of the (OS or NS) 'inner track rod' on the steering rack. Ensure that both of the steering rack boots are identical in appearance as to not pre-empt the fault on the steering rack. › Vehicle to be set up on a four post ramp, if swivel plates are fitted to the ramp, ensure that these are in the locked position. › Ramp to be fitted / not fitted with jacking beam.

Vehicle/rig/other	Vehicle with steering rack without or with PAS
Tools and equipment list	Selection of lever bars Selection of hand tools to suit the task Clipboard Inspection lamp PPE

Marking of task

Correct answers	Correct identification of inner track road end to either OS or NS.
	Correct safe working practices
	Correct PPE used for the task

Required to pass task
100%

Module	Suspension, Steering, Wheels & Tyres
Task	Sus - 08
Task Title	Steering Mechanism - Vague Steering
Time - mins	10 Minutes

Technician Instructions	The driver has complained of vagueness to the steering of the vehicle. Inspect the steering mechanism and diagnose any defects.	**OFFICIAL USE ONLY**
	Report on any defects found during the inspection:	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Suspension, Steering, Wheels & Tyres 09

Module	Suspension, Steering, Wheels & Tyres
Task	Sus – 09
Task Title	Steering Mechanism – Stiff Steering
Time – mins	10
NOS ref	IMILV08/13

Technician Instructions	The driver has complained of an unusual stiffness to the steering. Inspect the steering mechanism and diagnose any defects. Report on any defects found during the inspection:

Additional information	Note that the task may include one or more faults, only record the faults you have identified.
	Please ask your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Set up a seized universal joint to the steering column so it feels stiff or provides a notchy action every 1/4 turn. › Allow easy access to remove the steering shaft from the steering rack/box. › Vehicle to be set up on a four post ramp and positioned on swivel plates that are fitted to the ramp and used for this assessment. Ensure that these are in the unlocked position. › Ramp to be fitted / not fitted with jacking beam.

Vehicle/rig/other	Vehicle or rig with steering rack/box (without or with PAS)
Tools and equipment list	Selection of levers bars Selection of hand tools to suit the task Clipboard Inspection lamp and a well-lit area of workshop PPE

Marking of task

Correct answers	Correct identification of the seized universal joint
	Correct safe working practices
	Correct PPE used for the task

Required to pass task
100%

Module	Suspension, Steering, Wheels & Tyres
Task	Sus - 09
Task Title	Steering Mechanism - Stiff Steering
Time - mins	10 Minutes

Technician Instructions	The driver has complained of an unusual stiffness to the steering. Inspect the steering mechanism and diagnose any defects.	**OFFICIAL USE ONLY**
	Report on any defects found during the inspection:	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Suspension, Steering, Wheels & Tyres 10

Module	Suspension, Steering, Wheels & Tyres
Task	Sus – 10
Task Title	Steering Mechanism Check
Time – mins	10
NOS ref	IMILV08/13

Technician Instructions	The driver has complained of vagueness in the steering. Inspect for free play in the steering mechanism and diagnose any excessively worn components. List any components that have been diagnosed with excessive wear.
A	
B	
C	

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Set up a steering mechanism with 'one' component that provides excessive free play in the steering (noticed at the steering wheel). › Vehicle set up on a four post ramp and either, not on swivel plates or on locked swivel plates Ramp to be fitted / not fitted with jacking beam.

Vehicle/rig/other	Vehicle without PAS
Tools and equipment list	Selection of hand tools to suit the task Clipboard Inspection lamp and well-lit area of workshop PPE

Marking of task

Correct answers	Correct identification of steering component that gives excessive free play
	Correct safe working practices
	Correct PPE used for the task

Required to pass task
100%

Module	Suspension, Steering, Wheels & Tyres
Task	Sus - 10
Task Title	Steering Mechanism Check
Time - mins	10 Minutes

Technician Instructions	The driver has complained of vagueness in the steering. Inspect for free play in the steering mechanism and diagnose any excessively worn components. List any components that have been diagnosed with excessive wear.	**OFFICIAL USE ONLY**
	A:	
	B:	
	C:	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Brakes: Sub-Group A

Sub-Group	Brakes Technician must complete 1 task from each sub-group
A	Disc Measurement
B	Brake servo
	ABS Fault (1)
	ABS Fault (2)
C	Brake fluid
	Brake pipe fabrication
	Brake pipe/hosepipe inspection
D	Disc caliper
	Handbrake – Not functioning
	Drum brake inefficient

Trainer Guidance: Brakes 01

Module	Brakes
Task	Bra - 01
Task Title	Disc - Measurement
Time – mins	10
NOS ref	IMILV13

Technician Instructions	The driver of the vehicle has identified a judder /shudder when the brakes are applied. Measure the brake disc thickness and run out (on one of the discs) and record the results. Locate and record the recommended specifications and compare them with the actual results.
	Disc run out:
	Disc thickness:
	Variation in disc thickness:

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	One brake disc to be mounted on a rig (mounted to the hub assembly) which is accessible so measurements can be taken. Rig to be securely mounted The disc must rotate on a bearing.

Vehicle/rig/other	Rig
Tools and equipment list	Work bench Selection of hand tools to suit task Clipboard Inspection lamp/well-lit workshop area Micrometer to measure the thickness of the disc Dial Test Indicator gauge and mounts to check the disc run out

Marking of task

Correct answers	Correct measurement of disc run out (tolerance of +/- 0.02mm)
	Correct measurement of thickness (tolerance of +/- 0.10mm)
	Correct measurement of variation of thickness (tolerance of +/- 0.05mm)
	Correct safe working practices
	Correct PPE used for the task

Required to pass task
100%

Module	Brakes
Task	Bra - 01
Task Title	Disc - Measurement
Time - mins	10 Minutes

Technician Instructions	The driver of the vehicle has identified a judder /shudder when the brakes are applied. Measure the brake disc thickness and run out (on one of the discs) and record the results. Locate and record the recommended specifications and compare them with the actual results.	**OFFICIAL USE ONLY**
	Disc run out:	
	Minimum disc thickness:	
	Variation in disc thickness:-	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Brakes: Sub-Group B

Sub-Group	Brakes Technician must complete 1 task from **each** sub-group
A	Disc Measurement
B	Brake servo
	ABS Fault (1)
	ABS Fault (2)
C	Brake fluid
	Brake pipe fabrication
	Brake pipe/hosepipe inspection
D	Disc caliper
	Handbrake – Not functioning
	Drum brake inefficient

Trainer Guidance: Brakes 02

Module	Brakes
Task	Bra - 02
Task Title	Brake Servo
Time – mins	10
NOS ref	IMILV13

Technician Instructions	The driver of the vehicle has indicated that the brakes are not working effectively. The brake pedal has to be pushed harder than they once did, in order to stop the vehicle, especially under continuous heavy braking. Inspect and test the braking system and diagnose the defect. Record the results of your diagnosis.
	Results of diagnosis:

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Brake servo pipe restricted from inlet manifold (or vacuum pump) that prevents the servo from operating /giving no brake action.

Vehicle/rig/other	Vehicle/Rig
Tools and equipment list	Petrol or diesel engine vehicle Clipboard Inspection lamp

Marking of task

Correct answers	Correctly diagnose the brake servo not working from within the driver's seat.
	Correct safe working practices.
	Correct PPE used for the task

Required to pass task
100%

Module	Brakes
Task	Bra - 02
Task Title	Brake Servo
Time - mins	10 Minutes

Technician Instructions	The driver of the vehicle has indicated that the brakes are not working effectively. The brake pedal has to be pushed harder than they once did, in order to stop the vehicle, especially under continuous heavy braking. Inspect and test the braking system and diagnose the defect. Record the results of your diagnosis.	**OFFICIAL USE ONLY**
	Results of diagnosis:	
	Correct safe working practices – OFFICE USE ONLY	
	Correct PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Brakes 03

Module	Brakes
Task	Bra - 03
Task Title	ABS fault (1)
Time – mins	10
NOS ref	IMILV13

Technician Instructions	The driver of the vehicle has identified that the ABS warning lamp is permanently illuminated. The anti-lock braking system has indicated a fault code with the N/S/F wheel speed sensor. Diagnose the fault with the sensor and/or the electrical circuit. Record the results of the tests and conclude with a diagnosis:

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Vehicle fitted with ABS and with inductive type sensors. › NSF wheel speed sensor harness between the ABS ECU and the ABS NSF wheel speed sensor open circuit. › Extract the ABS fault code using a fault code reader and print out and laminate the print out sheet. › Allow easy access to the ABS harness between the ECU connector and the wheel speed sensor harness connector. › Remove all necessary trims.

Vehicle/rig/other	Vehicle/Rig
Tools and equipment list	Work bench Selection of hand tools to suit task Clipboard Inspection lamp Multimeter Additional wiring/harness to create a temporary harness to check continuity of the wiring

Marking of task

Correct answers	Correct diagnosis of an 'open circuit' between the ABS ECU harness plug terminals and the NSF wheel speed sensor
	Correct safe working practices.
	Correct PPE used for the task

Required to pass task
100%

Module	Brakes
Task	Bra - 03
Task Title	ABS fault (1)
Time - mins	10 Minutes

Technician Instructions	The driver of the vehicle has identified that the ABS warning lamp is permanently illuminated. The anti-lock braking system has indicated a fault code with the N/S/F wheel speed sensor. Diagnose the fault with the sensor and/or the electrical circuit.	**OFFICIAL USE ONLY**
	Record the results of the tests and conclude with a diagnosis:	
	Correct diagnosis of wheel speed sensor/circuit – OFFICE USE ONLY	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:
Date:

Trainer Guidance: Brakes 04

Module	Brakes
Task	Bra - 04
Task Title	ABS Fault (2)
Time – mins	10
NOS ref	IMILV13/IMIAEME106

Technician Instructions	The driver of the vehicle has identified that the ABS warning lamp is permanently illuminated. The ABS has indicated a fault code with the N/S/F wheel speed sensor. The ABS wheel speed sensor and its circuit to the ECU have been checked and no faults have been found. Inspect the ABS system and diagnose the fault.
	Record the results of the diagnosis.

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Vehicle fitted with ABS and with inductive type sensors. › N/S/F wheel speed sensor rotor two adjacent rotor teeth effectively missing. Either damage the rotor or fill the gaps with metallic objects to create the effect of a damaged rotor. › Identify the ABS fault code and print out the results › Remove the N/S/F road wheel from the vehicle › The vehicle can be raised on a vehicle ramp (two of four posts) or raised and supported on the floor › Remove all necessary trims

Vehicle/rig/other	Vehicle/Rig
Tools and equipment list	Work bench Selection of hand tools to suit task Clipboard Inspection lamp Multimeter Oscilloscope with the correct set up according to the waveform/signal voltage

Marking of task

Correct answers	Correct diagnosis of N/S/F wheel speed sensor rotor damaged (teeth missing).
	Correct safe working practices.
	Correct PPE used for the task.

Required to pass task
100%

Module	Brakes
Task	Bra - 04
Task Title	ABS fault (2)
Time - mins	10 Minutes

Technician Instructions	The driver of the vehicle has identified that the ABS warning lamp is permanently illuminated. The ABS has indicated a fault code with the N/S/F wheel speed sensor. The ABS wheel speed sensor and its circuit to the ECU have been checked and no faults have been found. Inspect the ABS system and diagnose the fault.	**OFFICIAL USE ONLY**
	Record the results of the diagnosis.	
	Correct safe working practices – OFFICE USE ONLY	
	Correct PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Brakes: Sub-Group C

Sub-Group	Brakes Technician must complete 1 task from each sub-group
A	Disc Measurement
B	Brake servo
	ABS Fault (1)
	ABS Fault (2)
C	Brake fluid
	Brake pipe fabrication
	Brake pipe/hosepipe inspection
D	Disc caliper
	Handbrake – Not functioning
	Drum brake inefficient

Trainer Guidance: Brakes 05

Module	Brakes
Task	Bra - 05
Task Title	Brake Fluid
Time – mins	10
NOS ref	IMILV12

Technician Instructions	Check the properties of the brake fluid samples, such as boiling point and serviceability. Record the test results and identify any braking faults or symptoms that may be caused by these samples.
A: Fluid Serviceable	YES / NO
A: Faults/symptom	
B: Fluid Serviceable	YES / NO
B: Faults/symptom	
C: Fluid Serviceable	YES / NO
C: Faults/symptom	

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Provide 3 samples of brake fluid; one may be a vehicle master cylinder. › Label each sampler A to E.

	• Each sample must contain a brake fluid with a different boiling point value, serviceable (300 - 220 deg c), border line (220 - 180 deg c) and not serviceable (below 180 deg c). • For each AM and PM assessment use new fluid for one of the samples. • One sample must be heavily contaminated (dirty or with water) • Provide a brake boiling point tester to measure the boiling point within 4 hours of the assessment.

Vehicle/rig/other	• N/A
Tools and equipment list	• Brake fluid tester. This can be either equipment that registers the exact boiling point or a red/amber/green brake fluid tester • Cleaning cloth and absorbent materials • Clipboard • Inspection lamp • PPE

Marking of task

Correct answers	Accurate boiling point to within 10 degrees centigrade
	Indicate which fluid is serviceable and not serviceable.
	Correct use of equipment
	Correct safe working practices
	Correct PPE used for the task

Required to pass task
100%

Module	Brakes
Task	Bra - 05
Task Title	Brake Fluid
Time - mins	10 Minutes

Technician Instructions	Check the properties of the brake fluid samples, such as boiling point and serviceability. Record the test results and identify any braking faults or symptoms that may be caused by these samples.	**OFFICIAL USE ONLY**
	A:- Fluid Serviceable = YES / NO	
	A:- Faults/symptom =	
	B:- Fluid Serviceable = YES / NO	
	B:- Faults/symptom =	
	C:- Fluid Serviceable = YES / NO	
	C:- Faults/symptom =	
	Use of equipment – OFFICE USE ONLY	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Brakes 06

Module	Brakes
Task	Bra - 06
Task Title	Brake Pipe Fabrication
Time – mins	10
NOS ref	IMILV12

Technician Instructions	Produce two brake pipes that meet the specifications below: › The brake pipe must have an internal flare at both ends and have female fittings at both ends. The brake pipe must be 10 cm in length. › The brake pipe must have an external flare at both ends and have male fittings at both ends. The brake pipe must be 10 cm in length. The completed pipes must be left on the bench at the end of the task for assessment.

Additional information	Please ask your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Provide all of the tools and equipment required to carry out the fabrication of the brake pipe. › Provide a workbench with a securely mounted vice. › Provide copper brake pipe but not cut to length › Provide a brake pipe flaring kit in the toolbox that it was supplied in.

Vehicle/rig/other	N/A
Tools and equipment list	Work bench Vice fitted securely to the workbench Selection of hand tools to suit task Tape measure Clipboard Well-lit area of the workshop Roll of copper brake pipe 3/8 Brake pipe flaring kit (opened and fully stocked) Supply of brake pipe unions to suit brake pipe (internal/external) Torque wrench – selection of (if applicable to brake pipe flaring kit) Grease/oil Manufacturer of equipment instructions/specs

Marking of task

Correct answers	Brake pipe to 10cm (+/- 0.5 cm)
	External flare
	Internal flare
	Correct unions fitted to brake pipe
	Correct safe working practices.
	Correct PPE used for the task

Required to pass task
100%

Module	Brakes
Task	Bra - 06
Task Title	Brake Pipe Fabrication
Time - mins	10 Minutes

Technician Instructions	Produce two brake pipes that meet the specifications below: The completed pipes must be left on the bench at the end of the task for assessment.	**OFFICIAL USE ONLY**
	The brake pipe must have an internal flare at both ends and have female fittings at both ends. The brake pipe must be 10 cm in length.	
	Brake pipe should have an external flare at both ends and have male fittings at both ends. The brake pipe should be 10 cm in length.	
	Correct unions fitted to brake pipe – OFFICE USE ONLY	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Brakes 07

Module	Brakes
Task	Bra - 07
Task Title	Brake Pipe/Brake Hose Inspection
Time – mins	10
NOS ref	IMILV12

Technician Instructions	Visually inspect the brake pipes and brake hoses on the vehicle, **do not** scrape or physically remove any surface contamination. Record any defects and report on their serviceability. Report on the brake pipes and brake hose condition and serviceability: A: O/S/F Condition = Serviceable = B: N/S/F Condition = Serviceable = C: Rear Condition = Serviceable = Identify two faults on the flexible brake hose: D: E:

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	Vehicle / rig with brake pipes / brake hoses with three faults from the list below: - Kinked - Stretched or twisted - Excessively chafed, damaged or deteriorated - Brake hose ferrule(s)excessively corroded - Exposed to excessive heat

Vehicle/rig/other	Vehicle/rig
Tools and equipment list	Brake pipe corrosion tool Selection of hand tools to suit task Clipboard Inspection lamp Well-lit workshop area PPE

Marking of task

Correct answers	Correct ID of each brake pipe / brake hose condition
	Correct ID of each brake pipe / brake hose serviceability
	Correct safe working practices.
	Correct PPE used for the task

Required to pass task
100%

Module	Brakes
Task	Bra - 7
Task Title	Brake Pipe/Brake Hose Inspection
Time - mins	10 Minutes

Technician Instructions	Visually inspect the brake pipes and brake hoses on the vehicle, do not scrape or physically remove any surface contamination. Report on the brake pipes and brake hose condition and serviceability:	**OFFICIAL USE ONLY**
	A:- O/S/F Condition: Serviceable:	
	B:- N/S/F Condition: Serviceable:	
	C:- Rear Condition: Serviceable:	
	Identify two faults on the flexible brake hose:	
	D:	
	E:	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Brakes: Sub-Group D

Sub-Group	Brakes Technician must complete 1 task from **each** sub-group
A	Disc Measurement
B	Brake servo
	ABS Fault (1)
	ABS Fault (2)
C	Brake fluid
	Brake pipe fabrication
	Brake pipe/hosepipe inspection
D	Disc caliper
	Handbrake – Not functioning
	Drum brake inefficient

Trainer Guidance: Brakes 08

Module	Brakes
Task	Bra - 08
Task Title	Disc Caliper
Time – mins	10
NOS ref	IMILV12

Technician Instructions	The front brake lining is worn unevenly. Inspect the front caliper (as indicated by your assessor) for worn and seized components that would cause the brake linings to wear unevenly. Assess the brake linings and the braking components and diagnose any: i. brake lining defect(s) ii. brake component defect(s)

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Brake pad fault (incorrectly set/worn brake pad one side (below 75% of the original spec) or seized caliper / damaged or removed dust cover to sliding mechanism. › Vehicle / rig to be can be used securely mounted on workbench. › Wheels removed from the vehicle.

Vehicle/rig/other	Vehicle/Rig
Tools and equipment list	Work bench If applicable - vice fitted to workbench that allows caliper / disc assembly to be held securely Selection of hand tools to suit task Clipboard Inspection lamp Torque wrench - selection of Manufacturer instructions / specs

Marking of task

Correct answers	Correctly identify the brake pads worn
	Correctly identify the disc / caliper worn component
	Correct use of torque wrench (if used) and at specified setting (less 50%)
	Correct safe working practices.
	Correct PPE used for the task.

Required to pass task
100%

Module	Brakes
Task	Bra - 8
Task Title	Disc Caliper
Time - mins	10 Minutes

Technician Instructions	The front brake lining is worn unevenly. Inspect the front caliper (as indicated by your assessor) for worn and seized components that would cause the brake linings to wear unevenly. Assess the brake linings and the braking components and diagnose any: **i.** brake lining defect(s) **iii.** brake component defect(s)	**OFFICIAL USE ONLY**
	Brake lining defect(s)	
	Brake component defect(s)	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Brakes 09

Module	Brakes
Task	Bra - 09
Task Title	Parking brake – Not Functioning
Time – mins	10
NOS ref	IMILV13

Technician Instructions	The brakes on the vehicle have been inspected and the parking brake on one side is not operating correctly. (The assessor will verify which side). Inspect and adjust the rear brake Adjust the parking brake to operate effectively

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Vehicle or rig with drum brakes on the rear and automatic adjusters incorporated. › Allow easy access to the parking brake adjustment; ensure that the adjustment mechanism is free and easily adjustable. › Slacken off the automatic brake shoe adjuster to the brake and adjust to meet the specification › Rear wheels to be removed from vehicle/rig. › Once the brake shoes have been adjusted correctly then the parking brake should be within spec. › Ensure that the drum(s) are not lipped/worn **Note that this task will not automatically reset**

Vehicle/rig/other	Vehicle/Rig
Tools and equipment list	Work bench Selection of hand tools to suit task Clipboard Inspection lamp

Marking of task

Correct answers	Correct adjustment of rear brake shoes.
	Correct adjustment of the parking brake to meet the specification.
	Correct safe working practices.
	Correct PPE used for the task.

Required to pass task
100%

Module	Brakes
Task	Bra - 09
Task Title	Parking brake - Not Functioning
Time - mins	10 Minutes

Technician Instructions	The brakes on the vehicle have been inspected and the parking brake on one side is not operating correctly. (The assessor will verify which side). **i.** Inspect and adjust the rear brake **ii.** Adjust the parking brake to operate effectively	**OFFICIAL USE ONLY**
	Adjustment of rear brake shoes - – OFFICE USE ONLY	
	Adjustment of parking brake to the minimum requirement – OFFICE USE ONLY	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Brakes 10

Module	Brakes
Task	Bra - 10
Task Title	Brake Drum Inefficient
Time – mins	10
NOS ref	IMILV13

Technician Instructions	The brake (indicated by the assessor) has been deemed inefficient. Inspect the brake assembly and diagnose which components must be replaced.
	The components that must be replaced are:

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Vehicle or rig with drum brakes to the rear. › Soak the lining of the 'leading brake shoe' in brake fluid. The brake shoe should be immersed for a minimum of 24 hours in brake fluid. Once soaked, refit the brake shoe to the brake assembly correctly and adjust the brake shoes correctly. › Peel back the wheel cylinder dust covers and fill the dust cover with brake fluid to indicate that the wheel cylinder is leaking which results in contaminating the brake shoe. › Rear wheels to be removed from vehicle/rig › Adjust the drum brakes so they are within specification. › Ensure that the drums are not lipped or worn.

Vehicle/rig/other	Vehicle/rig
Tools and equipment list	Work bench Selection of hand tools to suit task Clipboard Inspection lamp

Marking of task

Correct answers	Correct identification of rear brake shoe contaminated.
	Correct identification of rear brake wheel cylinder leaking.
	Correct safe working practices.
	Correct PPE used for the task.

Required to pass task
100%

Module	Brakes
Task	Bra - 10
Task Title	Drum Brake Inefficient
Time - mins	10 Minutes

Technician Instructions	The brake (indicated by the assessor) has been deemed inefficient. Inspect the brake assembly and diagnose which components must be replaced.	**OFFICIAL USE ONLY**
	The components that must be replaced are:	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Emission: Sub-Group A

Sub-Group	Emissions Technician must complete 1 task from **each** sub-group
A	Live Data – Analyse Data
B	Emission tester
	Emission test sample
	Petrol injector fault
C	O2 Sensor – Data (1)
	O2 Sensor – Data (2)
	Scan tool data
D	Fuel system
	Engine non-start (1)
	Engine non-start (2)

Trainer Guidance: Emission 01

Module	Emission
Task	Emi - 01
Task Title	Live Data – Analyse Data
Time – mins	10
NOS ref	IMIAEME106

Technician Instructions	Analyse a range of scan tool "live data" and interpret if the data is correct or incorrect. **(delete as applicable)** A: Engine Speed - **correct / incorrect** B: Engine Coolant Temperature - **correct / incorrect** C: Fuel Pump Relay - **correct / incorrect** D: Throttle Position - **correct / incorrect** E: Oxygen sensor (1) - **correct / incorrect**

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Petrol engine vehicle / petrol rig with scan tool connected and the data list which is displayed on the tool / equipment. › One of the data list parameters must be out of specification (through sensor/actuator signal manipulation). › Ensure that the engine temperature is at the correct operating temperature prior to commencing the assessments. › Ensure that the scan tool is in working order and communicates with the engine management system. › This task is **not** about the navigation of the test equipment; if the Technician needs assistance the Technician **must** be assisted.

Vehicle/rig/other	Vehicle/Rig – petrol engine
Tools and equipment list	Scan tool Work bench Well-lit workshop area Technician marking sheet

Marking of task

Delete as applicable to show correct / incorrect
A: Engine Speed - **correct / incorrect**
B: Engine Coolant Temperature - **correct / incorrect**
C: Fuel Pump Relay - **correct / incorrect**
D: Throttle Position - **correct / incorrect**
E:-Oxygen sensor (1) - **correct / incorrect**

Required to pass task
100%

Module	Emission
Task	Emi- 01
Task Title	Live Data - Analyse Data
Time - mins	10 Minutes

Technician Instructions	Analyse a range of scan tool "live data" and interpret if the data is correct or incorrect. **(Delete as appropriate)**	**OFFICIAL USE ONLY**
	A: Engine Speed - **correct / incorrect**	
	B: Engine Coolant Temperature - **correct / incorrect**	
	C: Fuel Pump Relay - **correct / incorrect**	
	D: Throttle Position - **correct / incorrect**	
	E: Oxygen sensor (1) - **correct / incorrect**	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Emission: Sub-Group B

Sub-Group	Emissions Technician must complete 1 task from **each** sub-group
A	Live Data – Analyse Data
B	Emission tester
	Emission test sample
	Petrol injector fault
C	O2 Sensor – Data (1)
	O2 Sensor – Data (2)
	Scan tool data
D	Fuel system
	Engine non-start (1)
	Engine non-start (2)

Trainer Guidance: Emission 02

Module	Emission
Task	Emi - 02
Task Title	Emission Tester
Time – mins	10
NOS ref	IMILV07

Technician Instructions	Analyse the emissions from a petrol vehicle using an industry standard emission tester. Test the emission output and interpret the readings to assess whether there is a fault. If a fault is identified diagnosis the possible fault from the list below **(*delete as appropriate):** **Is there a possible fault?** yes / no* **Possible faults:** i. Petrol injection fault* ii. Ignition system / engine mechanical fault* iii. Exhaust system fault* iv. Induction system fault *

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Ignition misfire fault - suggest close a spark plug gap to produce an ignition misfire and increase the HC emitted in the exhaust gas. › Increase in HC content in the exhaust emission. › Ensure that the engine temperature is at the correct operating temperature with all tests. › Ensure that the exhaust emission tester is in good working order.

	The emission tester must measure 4 exhaust gases, CO, HC, O2, and CO2.

Vehicle/rig/other	Vehicle/Rig – petrol engine
Tools and equipment list	Exhaust gas analyser with a print facility Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit task Clipboard Well-lit workshop area PPE

Marking of task

Correct answers	Correct identification of possible fault exhaust gas analyser results against given faults.
	Petrol injection fault.
	Correct safe working practices.
	Correct PPE used for the task.

Required to pass task
100%

Module	Emission
Task	Emi - 02
Task Title	Emission Tester
Time - mins	10 Minutes

Technician Instructions	Analyse the emissions from a petrol vehicle using an industry standard emission tester. Test the emission output and interpret the readings to assess whether there is a fault. If a fault is identified diagnosis the possible fault from the list below **(*delete as appropriate):** **Is there a possible fault?** yes / no*	**OFFICIAL USE ONLY**
	Possible faults:	
	i. Petrol injection fault*	
	ii. Ignition system / engine mechanical fault*	
	iii. Exhaust system fault*	
	iv. Induction system fault *	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Emission 03

Module	Emission
Task	Emi - 03
Task Title	Emission Test Sample
Time – mins	10
NOS ref	IMILV07

Technician Instructions	Interpret which data set relate to the fault(s) below using the five petrol emission test results. Select and record the letter which identifies the fault on each data set. A. Fuel misfire B. Ignition misfire C. Exhaust leak D. Inlet manifold leak E. No emission fault(s)

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Illustration of five different sets of emission related data which is to be laid out to the Technician. › Laminate the data on A4 paper and make up a document set either in a folder or bound. › Clearly identify on 'each' illustration the letter of the data set. › Allow the letter to be transferred between the sheets for flexibility.

Vehicle/rig/other	No vehicle or rig needed.
Tools and equipment list	5 pictures laminated and labelled A to E Technician marking sheet

Marking of task

Correct answers	A.	Data required
	B.	Data required
	C.	Data required
	D.	Data required
	E.	Data required

Required to pass task
100%

Module	Emission
Task	Emi - 03
Task Title	Emission Test Sample
Time - mins	10 Minutes

Technician Instructions	Interpret which data set relate to the fault(s) below using the five petrol emission test results. Select and record the letter which identifies the fault on each data set.		**OFFICIAL USE ONLY**
	Fault	Letter (A-E)	
	Fuel misfire		
	Ignition misfire		
	Exhaust leak		
	Inlet manifold leak		
	No emission fault(s)		
Assessor signature			
Date of Completion			

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Emission 04

Module	Emission
Task	Emi - 04
Task Title	Petrol Injector Fault
Time – mins	10
NOS ref	IMILV07

Technician Instructions	Analyse the control signal of the injectors and diagnose which injector is out of specification. i. Record the results and compare them to the specification Results: Original specification: i. i. Record which injector is not within specification.

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Ensure that the engine temperature is at the correct operating temperature with all tests. › Ensure that the scan tool is in good working order and communicates with the engine management system. › Limit the voltage to the injector of one cylinder by an open circuit between the injector and the ECU.

Vehicle/rig/other	Vehicle/Rig – petrol/diesel engine.
Tools and equipment list	Scan tool with correct software to vehicle engine management system restricted to live data only Oscilloscope Multimeter (with duty cycle/injector duration) Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit task Clipboard Well-lit workshop area PPE

Marking of task

Correct answers	Injector identified which is not within specification
	Correct identification of incorrect sensor/actuator signal data
	Correct safe working practices.
	Correct PPE used for task.

Required to pass task
100%

Module	Emission
Task	Emi - 04
Task Title	Petrol Injector Fault
Time - mins	10 Minutes

Technician Instructions	Analyse the control signal of the injectors and diagnose which injector is out of specification.	**OFFICIAL USE ONLY**
	i. Record the results and compare them to the specification. Results: Original specification:	
	ii. Record which injector is not within specification.	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician name:

Date:

Emission: Sub-Group C

Sub-Group	Emissions Technician must complete 1 task from **each** sub-group
A	Live Data – Analyse Data
B	Emission tester
	Emission test sample
	Petrol injector fault
C	O2 Sensor – Data (1)
	O2 Sensor – Data (2)
	Scan tool data
D	Fuel system
	Engine non-start (1)
	Engine non-start (2)

Trainer Guidance: Emission 05

Module	Emission
Task	Emi - 05
Task Title	O2 Sensor – Data (1)
Time – mins	10
NOS ref	IMILV07

Technician Instructions	Analyse the oxygen sensor reading via the 'live data' from a scan tool and diagnose the possible fault(s) from the list (* = delete as appropriate): A. Engine running rich* B. Engine running weak* C. No fault indicated* D. Exhaust system fault* E. Incorrect fuel to engine type*

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Engine running rich which is sensed by the oxygen sensor signal live voltage data reading, this could be achieved by decreasing the engine coolant temperature signal (high signal voltage) or by allowing the MAP sensor to sense atmospheric pressure (blank off MAP inlet manifold). › Petrol engine fitted with Zirconia type oxygen sensor. › Ensure that the engine temperature is at the correct operating temperature with all tests. › Ensure that the scan tool is in correct working order and communicates with the engine management system.

Vehicle/rig/other	Vehicle/Rig – petrol engine.
Tools and equipment list	Scan tool with correct software Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit the task Clipboard Well-lit workshop area PPE

Marking of task

Correct answers	Correct identification of possible fault (engine running rich) indicated by oxygen sensor results against given faults.
	Correct safe working practices.
	Correct PPE used for task.

Required to pass task
100%

Module	Emission
Task	Emi - 05
Task Title	O2 Sensor - Data (1)
Time - mins	10 Minutes

Technician Instructions	Analyse the oxygen sensor reading via the 'live data' from a scan tool and diagnose the possible fault(s) from the list **(* = delete as appropriate):**	**OFFICIAL USE ONLY**
	A: Engine running rich *	
	B: Engine running weak *	
	C: No fault indicated *	
	D: Exhaust system fault *	
	E: Incorrect fuel to engine type *	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Emission 06

Module	Emission
Task	Emi - 06
Task Title	O2 Sensor – Data (2)
Time – mins	10
NOS ref	IMILV07

Technician Instructions	Analyse the oxygen sensor reading via the 'live data' from a scan tool and diagnose the possible fault(s) from the list **(* = delete as appropriate):**

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Engine running weak which is sensed by the oxygen sensor signal live data voltage reading, this could be achieved by introducing an 'air leak' to the inlet manifold. › Petrol engine fitted with Zirconia type oxygen sensor. › Ensure that the engine temperature is at the correct operating temperature with ALL tests. › Ensure that the scan tool is in correct working order and communicates with the Engine Management system.

Vehicle/rig/other	Vehicle/rig – petrol engine.
Tools and equipment list	Scan tool with correct software Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit task Clipboard Well-lit workshop area PPE

Marking of task

Correct answers	Correct identification of possible fault (engine running weak) indicated by oxygen sensor results against given faults.
	Correct safe working practices.
	Correct PPE used for task.

Required to pass task
100%

Module	Emission
Task	Emi - 06
Task Title	O2 Sensor - Data (2)
Time - mins	10 Minutes

Technician Instructions	Analyse the oxygen sensor reading via the 'live data' from a scan tool and diagnose the possible fault(s) from the list **(* = delete as appropriate):**	**OFFICIAL USE ONLY**
	A: Engine running rich *	
	B: Engine running weak *	
	C: No fault indicated *	
	D: Exhaust system fault *	
	E: Incorrect fuel to engine type *	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Emission 07

Module	Emission
Task	Emi - 07
Task Title	Scan Tool Data
Time – mins	10
NOS ref	IMILV07

Technician Instructions	Analyse the following sensor/actuator readings via the 'live data' from a scan tool at the specified engine RPM. Interpret the results and identify which of the data readings are **<u>incorrect</u>** at the specified engine speeds? **(Delete as appropriate*)** A: Mass Air Flow/Map sensor @ 2,000rpm: *** correct / incorrect** B. Oxygen sensor (1) @ engine idle speed: *** correct / incorrect** C. Throttle Position Sensor @ 1,500rpm: *** correct / incorrect** D. Injection duration/data @ 2,000rpm: *** correct / incorrect** E. Engine Coolant Temperature @ idle speed : *** correct / incorrect**

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Ensure that the engine temperature is at the correct operating temperature with all tests. › Ensure that the scan tool is in the correct working order and communicates with the engine management system.

	Insert a resistor into the engine coolant temperature sensor signal circuit to produce a significant voltage high (suggest approx. constant 4, 5 volts) without producing a 'fault code' applicable to the sensor.

Vehicle/rig/other	Vehicle/Rig – petrol/diesel engine.
Tools and equipment list	Scan tool with correct software Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit task Clipboard Well-lit workshop area PPE

Marking of task

Correct answers	Correct identification of scan tool live data at the correct RPM (within 100 +/- RPM)
	Correct identification of incorrect sensor/actuator signal data.
	Correct safe working practices.
	Correct PPE used for task.

Required to pass task
100%

Module	Emission
Task	Emi - 07
Task Title	Scan Tool Data
Time - mins	10 Minutes

Technician Instructions	Analyse the following sensor/actuator readings via the 'live data' from a scan tool at the specified engine RPM. Interpret the results and identify which of the data readings are <u>incorrect</u> at the specified engine speeds? (Delete as appropriate*)	**OFFICIAL USE ONLY**
	A: Mass Air Flow / Map sensor @ 2,000rpm: *** correct / incorrect**	
	B: Oxygen sensor (1) @ engine idle speed: *** correct / incorrect**	
	C: Throttle Position Sensor @ 1,500 rpm: *** correct / incorrect**	
	D: Injection duration/data @ 2,000rpm: *** correct / incorrect**	
	E: Engine Coolant Temperature @ idle speed: *** correct / incorrect**	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Emission: Sub-Group D

Sub-Group	Emissions Technician must complete 1 task from **each** sub-group
A	Live Data – Analyse Data
B	Emission tester
	Emission test sample
	Petrol injector fault
C	O2 Sensor – Data (1)
	O2 Sensor – Data (2)
	Scan tool data
D	Fuel system
	Engine non-start (1)
	Engine non-start (2)

Trainer Guidance: Emission 08

Module	Emission
Task	Emi - 08
Task Title	Fuel System
Time – mins	10
NOS ref	IMILV07

Technician Instructions	The diesel engine is misfiring, carry out diagnostic tests to determine what the cause is. Make a selection from the choices below. **(* = delete as appropriate):** Diesel injection fault * Fuel ignition fault * Exhaust system fault * Turbo system fault *

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	Diesel injector misfire fault - suggest block/restrict the injector fuel supply at the fuel inlet to the injector. Misfire to the engine Ensure that the engine temperature is at the correct operating temperature with all tests.

Vehicle/rig/other	Vehicle/Rig – naturally aspirated diesel engine.
Tools and equipment list	Scan tool connected to engine with data list selected Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit task Clipboard Well-lit workshop area PPE

Marking of task

Correct Answers	Correct identification of possible fault from selection of given faults.
	Correct safe working practices.
	Correct PPE used for task.

Required to pass task
100%

Module	Emission
Task	Emi - 08
Task Title	Fuel System
Time - mins	10 Minutes

Technician Instructions	The diesel engine is misfiring, carry out diagnostic tests to determine what the cause is. Make a selection from the choices below. **(* = delete as appropriate):**	**OFFICIAL USE ONLY**
	Diesel injection fault *	
	Fuel ignition fault *	
	Exhaust system fault *	
	Turbo system fault *	
	Correct safe working practices – OFFICE USE ONLY	
	Correct PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Emission 09

Module	Emission
Task	Emi - 09
Task Title	Engine Non-Start (1)
Time – mins	10
NOS ref	IMILV07

Technician Instructions	A fuel problem is preventing the engine from starting, diagnose and record the cause. Cause of the fault:

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Block the fuel supply from the fuel tank so the engine will not start. › Easy access to fuel filter/fuel line. › Easy access to ignition system components. › Ensure that the scan tool is in correct working order and communicates with the engine management system.

Vehicle/rig/other	Vehicle/rig – petrol/diesel (common rail) engine.
Tools and equipment list	Container to accept fuel Ignition/spark neon/LED light tester to measure HT voltage Scan tool with correct software to vehicle Engine Management system to allow access to live data Multimeter Selection of hand tools to suit task Clipboard Well-lit workshop area PPE

Marking of task

Correct answers	Diagnose fuel not being supplied from fuel pump to engine
	Correct safe working practices.
	Correct PPE used for task.

Required to pass task
100%

Module	Emission
Task	Emi - 09
Task Title	Engine Non-Start (1)
Time - mins	10 Minutes

Technician Instructions	A fuel problem is preventing the engine from starting, diagnose and record the cause.	**OFFICIAL USE ONLY**
	Cause of the fault:	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Emission 10

Module	Emission
Task	Emi - 10
Task Title	Engine Non-Start (2)
Time – mins	10
NOS ref	IMILV07

Technician Instructions	The engine will not start due to an ignition related problem, diagnose and record the fault which is preventing starting. Fault diagnosis:

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Fuse to ignition coil(s) blown (spare fuse available) to prevent engine from starting. › Easy access to fuel filter/fuel line. › Easy access to ignition system components. › Ensure that the scan tool is in correct working order and communicates with the engine management system.

Vehicle/rig/other	› Vehicle/Rig – petrol engine.
Tools and equipment list	› Vehicle workshop manual (electrical wiring diagram + fuse location)

	• Ignition, spark neon or LED light tester to measure HT voltage • Scan tool with correct software to vehicle Engine Management system to allow access to live data • Multimeter • Selection of hand tools to suit task • Clipboard • Well-lit workshop area • PPE

Marking of task

Correct answers	Diagnose the fuse blown to ignition coil(s)
	Correct safe working practices.
	Correct PPE used for task.

Required to pass task
100%

Module	Emission
Task	Emi - 10
Task Title	Engine Non-Start (2)
Time - mins	10 Minutes

Technician Instructions	The engine will not start due to an ignition related problem, diagnose and record the fault which is preventing starting.	**OFFICIAL USE ONLY**
	Fault diagnosis:	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Electrical: Sub-Group A

Sub-Group	Electrical Technician must complete 1 task from **each** sub-group
A	Electrical wiring fault (1)
B	Resistance check
	Circuit produce – relay
	Circuit relay fault
C	Fault code diagnosis
	CAN network fault
	Electrical wiring fault (2)
D	Oscilloscope measurement
	Oscilloscope waveform ID
	Wiring diagram identification

Trainer Guidance: Electrical 01

Module	Electrical
Task	Ele - 01
Task Title	Electrical Wiring Fault (1)
Time – mins	10
NOS ref	IMIAEME106

Technician Instructions	The side lamp is dim and not emitting the correct intensity of light (as identified by your assessor). Diagnose the cause of the fault from the list below. **(* = delete as applicable).** **Note:** Measure the voltage at the earth side of the side lamp bulb holder:
	Wiring harness fault - high resistance to the supply to the bulb holder *
	Wiring harness fault - short circuit to the bulb holder *
	Wiring harness fault - high resistance to the earth circuit to the bulb holder *
	Fuse blown to the side lamp circuit *
	Short circuit to the OS side lamp circuit *
	Voltage measured at earth side of side lamp bulb holder = Volts

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	OS side lamp dim. High resistance in the side light bulb holder supply circuit, sufficient to illuminate an LED test lamp if used for diagnosis.

Vehicle/rig/other	Vehicle or electrical rig.
Tools and equipment list	Multimeter LED test lamp/circuit tester Vehicle Information – electrical wiring diagram Vehicle Information – component location(s) Various electrical connector/test leads Well-lit area of workshop/inspection lamp Technician marking sheet PPE

Marking of task

Correct answers	Correct - Wiring harness fault - high resistance to the supply to the bulb holder *
	Correct safe working practices
	Correct PPE used for task

Required to pass task
100%

Module	Electrical
Task	Ele - 01
Task Title	Electrical Wiring Fault (1)
Time - mins	10 Minutes

Technician Instructions	The side lamp is dim and not emitting the correct intensity of light (as identified by your assessor). Diagnose the cause of the fault from the list below. **(* = delete as applicable).** **Note**: Measure the voltage at the earth side of the side lamp bulb holder:	**OFFICIAL USE ONLY**
	Wiring harness fault - high resistance to the supply to the bulb holder *	
	Wiring harness fault - short circuit to the bulb holder*	
	Wiring harness fault - high resistance to the earth circuit to the bulb holder *	
	Fuse blown to the side lamp circuit *	
	Short circuit to the OS side lamp circuit *	
	Voltage measured at earth of side lamp bulb holder = …….Volts	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Electrical: Sub-Group B

Sub-Group	Electrical Technician must complete 1 task from **each** sub-group
A	Electrical wiring fault (1)
B	Resistance check
	Circuit produce – relay
	Circuit relay fault
C	Fault code diagnosis
	CAN network fault
	Electrical wiring fault (2)
D	Oscilloscope measurement
	Oscilloscope waveform ID
	Wiring diagram identification

Trainer Guidance: Electrical 02

Module	Electrical
Task	Ele - 02
Task Title	Resistance Check
Time – mins	10
NOS ref	IMILV03

Technician Instructions	Measure the resistance of the 5 wires presented to you. Record the measurements below. Wire A: Wire B: Wire C: Wire D: Wire E:

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	- Cut 5 lengths of wire 15 - 20cm in length. - Each wire must have a different resistance value. - Clearly identify each wire with a letter - Design the wiring so they can be changed for other technicians to ensure the assessment is fair and reliable.

Vehicle/rig/other	No vehicle or rig needed
Tools and equipment list	5 wires ,labelled A-E, positioned on a workbench Workbench Well-lit area Technician marking sheet

Marking of task

Correct answers	Resistance to be measured +/- 50 Ohms of specification.
	Zero (0) Ohms
	50 - 100 Ohms
	400 - 600 Ohms
	1000 - 1500 Ohms
	Open circuit

Required to pass task
100%

Module	Electrical
Task	Ele - 02
Task Title	Resistance Check
Time - mins	10 Minutes

Technician Instructions	Measure the resistance of the 5 wires presented to you. Record the measurements below.	**OFFICIAL USE ONLY**
	Wire A:	
	Wire B:	
	Wire C:	
	Wire D:	
	Wire E:	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Electrical 03

Module	Electrical
Task	Ele - 03
Task Title	Circuit Produce - Relay
Time – mins	10
NOS ref	IMILV03

Technician Instructions	Using the circuit diagram, produce an operating circuit that includes a switch, relay and lamp. Measure and record the voltage at the bulb holder earth connection when the circuit is operating. What is the Voltage?

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Circuit board without components fitted (example Locktronics or similar) › 1 relay (open 4 pin relay) › 10 solid wires › 1 bulb and holder › 1 circuit diagram

Vehicle/rig/other	No vehicle or rig needed – electrical circuit board.
Tools and equipment list	Multimeter with DC volts Workbench Well-lit area Technician marking sheet

Marking of task

Correct answers	Built circuit that functions – when switch is operated, the relay bulb illuminates.
	Correct measurement of voltage at point 'A' (+/- 0.2 volts).

Required to pass task
100%

Module	Electrical
Task	Ele - 03
Task Title	Circuit Produce - Relay
Time - mins	10 Minutes

Technician Instructions	Using the circuit diagram, produce an operating circuit that includes a switch, relay and lamp. Measure and record the voltage at the bulb holder earth connection when the circuit is operating.	**OFFICIAL USE ONLY**
	What is the Voltage?	
	Circuit function – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Electrical 04

Module	Electrical
Task	Ele - 04
Task Title	Circuit Relay Fault
Time – mins	10
NOS ref	IMIAEME106

Technician Instructions	A circuit has the correct voltage supplied but does **not** function correctly. The fuse and the component (consumer) have been checked and are serviceable. It is suspected that the relay to the circuit is faulty. Diagnose and record the cause of the electrical fault.

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	Vehicle / rig with easy accessible relay / wiring. Relay to have internal contacts disabled but still clicks when circuit operated. The must not be a substitute relay available to the Technician. Circuit diagram for the vehicle / circuit.

Vehicle/rig/other	Vehicle or rig (electrical circuit board)
Tools and equipment list	Multimeter with DC volts Circuit diagram for the vehicle/circuit Work bench Well-lit area Technician marking sheet

Marking of task

Correct answers	Identify the correct wiring / component fault.

Required to pass task
100%

Module	Electrical
Task	Ele - 04
Task Title	Circuit Relay Fault
Time - mins	10 Minutes

Technician Instructions	A circuit has the correct voltage supplied but does not function correctly. The fuse and the component (consumer) have been checked and are serviceable. It is suspected that the relay to the circuit is faulty. Diagnose and record the cause of the electrical fault.	**OFFICIAL USE ONLY**
	Diagnose and record the cause of the electrical fault.	
	Correct circuit function faulty component / circuit – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Electrical: Sub-Group C

Sub-Group	Electrical Technician must complete 1 task from **each** sub-group
A	Electrical wiring fault (1)
B	Resistance check
	Circuit produce – relay
	Circuit relay fault
C	Fault code diagnosis
	CAN network fault
	Electrical wiring fault (2)
D	Oscilloscope measurement
	Oscilloscope waveform ID
	Wiring diagram identification

Trainer Guidance: Electrical 05

Module	Electrical
Task	Ele - 05
Task Title	Fault Code Diagnosis
Time – mins	10
NOS ref	IMIAEME106

Technician Instructions	The fault code P0118 indicates that an engine coolant temperature sensor has 'high voltage'. Investigate and diagnose the: location of the fault cause of the fault **(*delete as appropriate)** A: Wiring harness fault – open circuit* B: Wiring harness fault – short circuit* C: Component fault – ECU* D: Component fault – Engine Coolant Temperature sensor*

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	Petrol engine vehicle. Access to the engine coolant temperature sensor and harness plug. Access to the Engine Control ECU and harness plug. Open circuit to the engine coolant temperature sensor signal wire.

Vehicle/rig/other	Petrol engine vehicle
Tools and equipment list	Multimeter Fault code reader with correct software Various electrical connector/test leads Well-lit area/inspection lamp Technician marking sheet

Marking of task

Correct answers	Wiring harness fault – open circuit*
	Correct safe working practices
	Correct PPE used for task

Required to pass task
100%

Module	Electrical
Task	Ele - 05
Task Title	Fault Code Diagnosis
Time - mins	10 Minutes

Technician Instructions	The fault code P0118 indicates that an engine coolant temperature sensor has 'high voltage'. Investigate and diagnose the: i. location of the fault ii. cause of the fault **(*delete as appropriate)**	**OFFICIAL USE ONLY**
	Wiring harness fault - open circuit *	
	Wiring harness fault - short circuit *	
	Component fault - ECU *	
	Component fault - Engine Coolant Temperature sensor *	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Electrical 06

Module	Electrical
Task	Ele - 06
Task Title	CAN Network Fault
Time – mins	10
NOS ref	IMIAEME106

Technician Instructions	The vehicle has a CAN network fault. **i.** Analyse fault code(s) and data from the scan tool. **ii.** Use diagnostic technique(s) to determine the fault. Chose the fault(s) from the list below **(* = delete as appropriate)** **a.** Short to ground (both CAN wires) * **b.** Short to positive * **c.** No communication from Body Control Module * **d.** Erratic CAN signal * **e.** Short to ground (one CAN wire) *

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Ground 'both' CAN wires › Vehicle fitted with CAN that generates fault code to suit fault. › Ensure that the scan tool is in correct working order and communicates with the CAN system - fault codes & live data presented to technician. › Removal of trims where appropriate. › Allow access of the CAN wiring easily accessible.

Vehicle/rig/other	Vehicle/rig – with CAN
Tools and equipment list	Scan tool with correct software to enable the following live data to be read and communicate with a range of control units. Multimeter (digital) Selection of hand tools to suit task Clipboard Well-lit workshop area PPE

Marking of task

Correct answers	Correct identification of CAN wiring connected to earth
	Correct safe working practices
	Correct PPE used for task

Required to pass task
100%

Module	Electrical
Task	Ele - 06
Task Title	CAN network fault
Time - mins	10 Minutes

Technician Instructions	The vehicle has a CAN network fault. i. Analyse fault code(s) and data from the scan tool. ii. Use diagnostic technique(s) to determine the fault. Chose the fault(s) from the list below **(* = delete as appropriate)**	**OFFICIAL USE ONLY**
	Short to ground (both CAN wires) *	
	Short to positive *	
	No communication from Body Control Module *	
	Erratic CAN signal *	
	Short to ground (one CAN wire) *	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Trainer Guidance: Electrical 07

Module	Electrical
Task	Ele - 07
Task Title	Electrical Wiring Fault (2)
Time – mins	10
NOS ref	IMIAEME106

Technician Instructions	The brake & side lamp have stopped working. All the bulbs have been checked and the fault has been traced to the wiring between the light clusters. Diagnose and select the cause of the fault from the list below. **(* = delete as applicable, note there may be more than one different circuit fault).** **a.** Wiring harness fault - high resistance between the NS & OS rear light clusters. * **b.** Wiring harness fault - short circuit before the bulb holder * **c.** Wiring harness fault - open circuit between the NS & OS rear light clusters. * **d.** High level brake light short circuit * **e.** Short circuit to the OS stop lamp bulb holder *

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Brake lamp fuse is blown. › Open circuit within the wiring between the NS & OS lamp clusters. › High resistance to the circuit within the wiring between the NS & OS lamp clusters (to the point that the bulb does not illuminate. › Removal of boot/luggage/tailgate/boot lid trim(s) to allow easy access to wiring harness.

	High resistance in the circuit sufficient to illuminate an LED test lamp at the bulb holder. Vehicle information to be located on workbench. Electrical test equipment to be located on workbench.

Vehicle/rig/other	Vehicle or electrical rig.
Tools and equipment list	Multimeter including amps clamp LED test lamp / circuit tester Vehicle Information - electrical wiring diagram Vehicle Information - component location(s) Various electrical connector / test leads Well-lit area / inspection lamp Technician marking sheet PPE

Marking of task

Correct answers	Correct - Open circuit to side light / stop lamp circuit.
	Correct - High resistance to side light / stop lamp circuit.
	Correct safe working practices
	Correct PPE used for task

Required to pass task
100%

Module	Electrical
Task	Ele - 07
Task Title	Electrical Wiring Fault (2)
Time - mins	10 Minutes

Technician Instructions	The brake & side lamp have stopped working. All the bulbs have been checked and the fault has been traced to the wiring between the light clusters. Diagnose and select the cause of the fault from the list below. **(* = delete as applicable, note there may be more than one different circuit fault).**	**OFFICIAL USE ONLY**
	a. Wiring harness fault - high resistance between the NS & OS rear light clusters *	
	b. Wiring harness fault - short circuit before the bulb holder *	
	c. Wiring harness fault - open circuit between the NS & OS rear light clusters *	
	d. High level brake light short circuit *	
	e. Short circuit to the OS stop lamp bulb holder *	
	Safe working practices – OFFICE USE ONLY	
	PPE used for task – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Electrical: Sub-Group D

Sub-Group	Electrical Technician must complete 1 task from each sub-group
A	Electrical wiring fault (1)
B	Resistance check
	Circuit produce – relay
	Circuit relay fault
C	Fault code diagnosis
	CAN network fault
	Electrical wiring fault (2)
D	Oscilloscope measurement
	Oscilloscope waveform ID
	Wiring diagram identification

Trainer Guidance: Electrical 08

Module	Electrical
Task	Ele - 08
Task Title	Oscilloscope Measurement
Time – mins	10
NOS ref	IMIAEME106

Technician Instructions	Test an injector and analyse its waveform. Record the i. opening period in milliseconds: ii. the peak voltage of the control signal: Report on the condition of the injector and identify if it is within specification.

Additional information	Use the oscilloscope and its measuring function to determine the components of the waveform (ask assessor if not used test equipment prior to assessment).

Set up of task	Petrol engine vehicle. Oscilloscope connected to an injector lead control signal terminal. Oscilloscope configured to the correct settings. Ensure that the engine temperature is at the correct operating temperature with all tests.

Vehicle/rig/other	Petrol engine vehicle.
Tools and equipment list	Oscilloscope Various electrical connector/test leads Well-lit area – inspection lamp Technician marking sheet

Marking of task

Correct answers	Correct injection duration +/- 10ms
	Correct injection control signal peak voltage +/- 10 volts

Required to pass task
100%

Module	Electrical
Task	Ele - 08
Task Title	Oscilloscope Measurement
Time - mins	10 Minutes

Technician Instructions	Test an injector and analyse its waveform. Record the Report on the condition of the injector and identify if it is within specification.	**OFFICIAL USE ONLY**
	i. opening period in milliseconds:	
	ii. the peak voltage of the control signal:	
	Report on the condition of the injector and identify if it is within specification.	
Assessor signature		
Date of Completion		

Additional information	Use the oscilloscope and its measuring function to determine the components of the waveform. (Inform the assessor prior to assessment if you are not familiar with the equipment)	

Technician Name:

Date:

Trainer Guidance: Electrical 09

Module	Electrical
Task	Ele - 09
Task Title	Oscilloscope Waveform ID
Time – mins	10
NOS ref	IMIAEME106

Technician Instructions	Identify the component, sensor or actuator signal from the from the five oscilloscope waveforms provided. They are labelled (A, B, C, D and E). Record the answers below: A. B. C. D. E.

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Set up of task	› Illustration of different oscilloscope waveform types to be laid out to the technician. › Centre to select the waveforms from the waveform list. › Laminate the illustrations on A4 paper and make up a document set either in a folder or bound. › Clearly identify 'each' illustration with a letter (A-E).

Vehicle/rig/other	› No vehicle or rig needed.
Tools and equipment list	› 5 pictures laminated and labelled › Technician marking sheet

Marking of task

Correct answers	5 correctly labelled pictures from the list below.
Image A	Injector (petrol)
Image B	Crankshaft Position/Engine Speed Sensor (inductive)
Image C	Oxygen Sensor (Zirconia)
Image D	Camshaft Position Sensor (inductive)
Image E	Mass Air Flow Sensor - Hot wire
Image F	Ignition Secondary circuit
Image G	Knock Sensor
Image H	CAN network
Image I	Accelerator Pedal Position Sensor
Image J	MAP Sensor
Image K	Wheel Speed Sensor (analogue)
Image L	Wheel Speed Sensor (digital)

Required to pass task
100%

Module	Electrical
Task	Ele - 09
Task Title	Oscilloscope Waveform ID
Time - mins	10 Minutes

Technician Instructions	Identify the component, sensor or actuator signal from the from the five oscilloscope waveforms provided. They are labelled (A, B, C, D and E). Record the answers below:	**OFFICIAL USE ONLY**
	Letter A:	
	Letter B:	
	Letter C:	
	Letter D:	
	Letter E:	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.

Technician Name:

Date:

Trainer Guidance: Electrical 10

Module	Electrical
Task	Ele - 10
Task Title	Wiring Diagram Identification
Time – mins	10
NOS ref	IMIAEME106

Technician Instructions	Analyse the multi-circuit wiring diagram and: i. identify the power supply circuit and the earth circuit (identified by your assessor) by using highlighter pens on the diagram. ii. identify the colour of the wires on the diagram using the legend provided.

Additional information	Inform your assessor if you require any clarification on the assessment requirements.

Set up of task	› Multi circuit wiring diagram (min of three circuits on one wiring diagram). › Selection of coloured highlighters (3 min). › Wiring diagram key / legend. › Vehicle information / diagrams etc. to be located on workbench.

Vehicle/rig/other	› Wiring diagram
Tools and equipment list	› Colour highlighters › Well-lit area › Technician marking sheet

Marking of task

Correct answers	Wiring correctly identified
	Power/earth circuits identified

Required to pass task
100%

Module	Electrical
Task	Ele - 10
Task Title	Wiring Diagram Identification
Time - mins	10 Minutes

Technician Instructions	Analyse the multi-circuit wiring diagram and: **i.** i. identify the power supply circuit and the earth circuit (identified by your assessor) by using highlighter pens on the diagram. **ii.** ii. identify the colour of the wires on the diagram using the legend provided.	**OFFICIAL USE ONLY**
	Live side of circuit correctly identified – OFFICE USE ONLY	
	Earth side of circuit correctly identified – OFFICE USE ONLY	
	Wiring colours identified correctly – OFFICE USE ONLY	
Assessor signature		
Date of Completion		

Additional information	Inform your assessor if you require assistance with the tools and equipment provided.	

Technician Name:

Date:

Appendix 2: Resource Requirements

Suspension, Steering, Wheels & Tyres

Task	Task Title	Vehicle/rig/other	Tools and equipment list
Sus – 01	Tyre Wear	No vehicle or rig needed	Two physical wheel / tyre assemblies Illustrations laminated and labelled A to E* Technician marking sheet
Sus – 02	Inspection of Vehicle Front Suspension (1)	Vehicle	Selection of levers - suitable to achieve the outcome of the task Selection of hand tools to suit task Clipboard Inspection lamp PPE
Sus – 03	Inspection of Vehicle Front Suspension (2)	Vehicle with front wishbone type suspension only can be used on this task.	Selection of levers – suitable to achieve the outcome of the task Selection of hand tools to suit task Clipboard Inspection lamp PPE
Sus – 04	Steering	Vehicle	Selection of hand tools to suit task Clipboard Inspection lamp and well-lit area of workshop PPE
Sus – 05	Anti-roll bar links / brushes	Vehicle only	Clipboard Inspection lamp PPE
Sus – 06	Inspection of Vehicle Rear Suspension	Vehicle with rear independent suspension can only be used on this task	Selection of levers - suitable to achieve the outcome of the task Selection of hand tools to suit task Clipboard Inspection lamp

			PPE
Sus – 07	Suspension Component Inspection	Rig only	Selection of levers - suitable to achieve the outcome of the task Selection of hand tools to suit task Clipboard Inspection lamp PPE
Sus – 08	Steering Mechanism – Vague Steering	Vehicle with steering rack without or with PAS	Selection of lever bars Selection of hand tools to suit the task Clipboard Inspection lamp PPE
Sus – 09	Steering Mechanism – Stiff Steering	Vehicle or rig with steering rack/box (without or with PAS)	Selection of levers bars Selection of hand tools to suit the task Clipboard Inspection lamp and a well-lit area of workshop PPE
Sus – 10	Steering Mechanism Check	Vehicle without PAS	Selection of hand tools to suit the task Clipboard Inspection lamp and well-lit area of workshop PPE

*Provided by SEG Awards – VTAA Practical Tasks Document

Brakes

Task	Task Title	Vehicle/rig/other	Tools and equipment list
Bra - 01	Disc - Measurement	Rig	Work bench

			Selection of hand tools to suit task Clipboard Inspection lamp/well-lit workshop area Micrometer to measure the thickness of the disc Dial Test Indicator gauge and mounts to check the run out
Bra - 02	Brake Servo	Vehicle/Rig	Petrol or diesel engine vehicle Clipboard Inspection lamp
Bra - 03	ABS fault (1)	Vehicle/Rig	Work bench Selection of hand tools to suit task Clipboard Inspection lamp Multimeter Additional wiring/harness to create a temporary harness to check continuity of the wiring
Bra - 04	ABS Fault (2)	Vehicle/Rig	Work bench Selection of hand tools to suit task Clipboard Inspection lamp Multimeter Oscilloscope with the correct set up according to the waveform/signal voltage
Bra - 05	Brake Fluid	n/a	Brake fluid tester. This can be either equipment that registers the exact boiling point or a red/amber/green brake fluid tester Cleaning cloth and absorbent materials Clipboard Inspection lamp PPE

Bra - 06	Brake Pipe Fabrication	n/a	Work bench Vice fitted securely to the workbench Selection of hand tools to suit task Tape measure Clipboard Well-lit area of the workshop Roll of copper brake pipe 3/8 Brake pipe flaring kit in packaging (opened and fully stocked) Supply of brake pipe unions to suit brake pipe (internal/external) Torque wrench – selection of (if applicable to brake pipe flaring kit) Grease/oil Manufacturer of equipment instructions/specs
Bra - 07	Brake Pipe/Brake Hose Inspection	Vehicle/rig	Brake pipe corrosion tool Selection of hand tools to suit task Clipboard Inspection lamp Well-lit workshop area PPE
Bra - 08	Disc Caliper	Vehicle/Rig	Work bench If applicable - vice fitted to workbench that allows caliper / disc assembly to be held securely Selection of hand tools to suit task Clipboard Inspection lamp Torque wrench - selection of Manufacturer instructions / specs
Bra - 09	Handbrake – Not Functioning	Vehicle/Rig	Work bench Selection of hand tools to suit task

			Clipboard Inspection lamp
Bra - 10	Brake Drum Inefficient	Vehicle/Rig	Work bench Selection of hand tools to suit task Clipboard Inspection lamp

Emissions

Task	Task Title	Vehicle/rig/other	Tools and equipment list
Emi - 01	Live Data – Analyse Data	Vehicle/Rig – petrol engine	Scan tool Work bench Well-lit workshop area Technician marking sheet
Emi – 02	Emission Tester	Vehicle/Rig – petrol engine	Exhaust Gas analyser with print out facility Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit task Clipboard Well-lit workshop area PPE
Emi – 03	Emission Test Sample	No vehicle or rig needed.	5 pictures laminated and labelled A to E Technician marking sheet
Emi – 04	Petrol Injector Fault	Vehicle/Rig – petrol/diesel engine.	Scan tool with correct software to vehicle Engine Management system restricted to live data only Oscilloscope Multimeter (with duty cycle/injector duration) Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit task

			Clipboard Well-lit workshop area PPE
Emi – 05	O2 Sensor – Data (1)	Vehicle/Rig – petrol engine.	Scan tool with correct software to system Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit task Clipboard Well-lit workshop area PPE
Emi – 06	O2 Sensor – Data (2)	Vehicle/rig – petrol engine.	Scan tool with correct software to system Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit task Clipboard Well-lit workshop area PPE
Emi – 07	Scan Tool Data	Vehicle/Rig – petrol/diesel engine.	Scan tool with correct software to system Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit task Clipboard Well-lit workshop area PPE
Emi – 08	Fuel System	Vehicle/Rig – naturally aspirated diesel engine.	Scan tool connected to engine with data list selected Exhaust extraction system securely fitted to exhaust tailpipe Selection of hand tools to suit task Clipboard Well-lit workshop area PPE

Emi – 09	Engine Non-Start (1)	Vehicle/Rig – petrol/diesel (common rail) engine	Container to accept fuel Ignition/spark neon/LED light tester to measure HT voltage Scan tool with correct software to vehicle Engine Management system to allow access to live data Multimeter Selection of hand tools to suit task Clipboard Well-lit workshop area PPE
Emi - 10	Engine Non-Start (2)	Vehicle/Rig – petrol engine	Vehicle workshop manual (electrical wiring diagram + fuse location) Ignition, spark neon or LED light tester to measure HT voltage Scan tool with correct software to vehicle Engine Management system to allow access to live data Multimeter Selection of hand tools to suit task Clipboard

Electrical

Task	Task Title	Vehicle/rig/other	Tools and equipment list
Ele - 01	Electrical Wiring Fault (1)	Vehicle or electrical rig	Multimeter LED test lamp/circuit tester Vehicle Information – Electrical wiring diagram Vehicle Information – Component location(s) Various electrical connector/test leads Well-lit area of workshop/inspection lamp

			Technician marking sheet PPE
Ele – 02	Resistance Check	No vehicle or rig needed	5 wires, labelled A-E, laid out on workbench Workbench Well-lit area Technician marking sheet
Ele – 03	Circuit Produce - Relay	No vehicle or rig needed – electrical circuit board	Multimeter with DC volts Workbench Well-lit area Technician marking sheet
Ele – 04	Circuit Relay Fault	Vehicle or rig (electrical circuit board)	Multimeter with DC volts Circuit diagram for the vehicle/circuit Work bench Well-lit area Technician marking sheet
Ele – 05	Fault Code Diagnosis	Petrol engine vehicle	Multimeter Fault code reader with correct software to communicate Various electrical connector/test leads Well-lit area/inspection lamp Technician marking sheet
Ele – 06	CAN Network Fault	Vehicle/rig – with CAN	Scan tool with correct software to system to enable the following live data to be read; communication with various control units. Multimeter (digital) Selection of hand tools to suit task Clipboard Well-lit workshop area PPE

Ele – 07	Electrical Wiring Fault (2)	Vehicle or electrical rig	› Multimeter including amps clamp › LED test lamp / circuit tester › Vehicle Information - Electrical wiring diagram › Vehicle Information - Component location(s) › Various electrical connector / test leads › Well-lit area / inspection lamp › Technician marking sheet › PPE
Ele – 08	Oscilloscope Measurement	Petrol engine vehicle	› Oscilloscope › Various electrical connector/test leads › Well-lit area – inspection lamp › Technician marking sheet
Ele – 09	Oscilloscope Waveform ID	No vehicle or rig needed	› 5 pictures laminated and labelled A – E* › Technician marking sheet
Ele - 10	Wiring Diagram Identification	Wiring diagram	› Colour highlighters › Well-lit area › Technician marking sheet

*Provided by SEG Awards – VTAA Practical Tasks Document