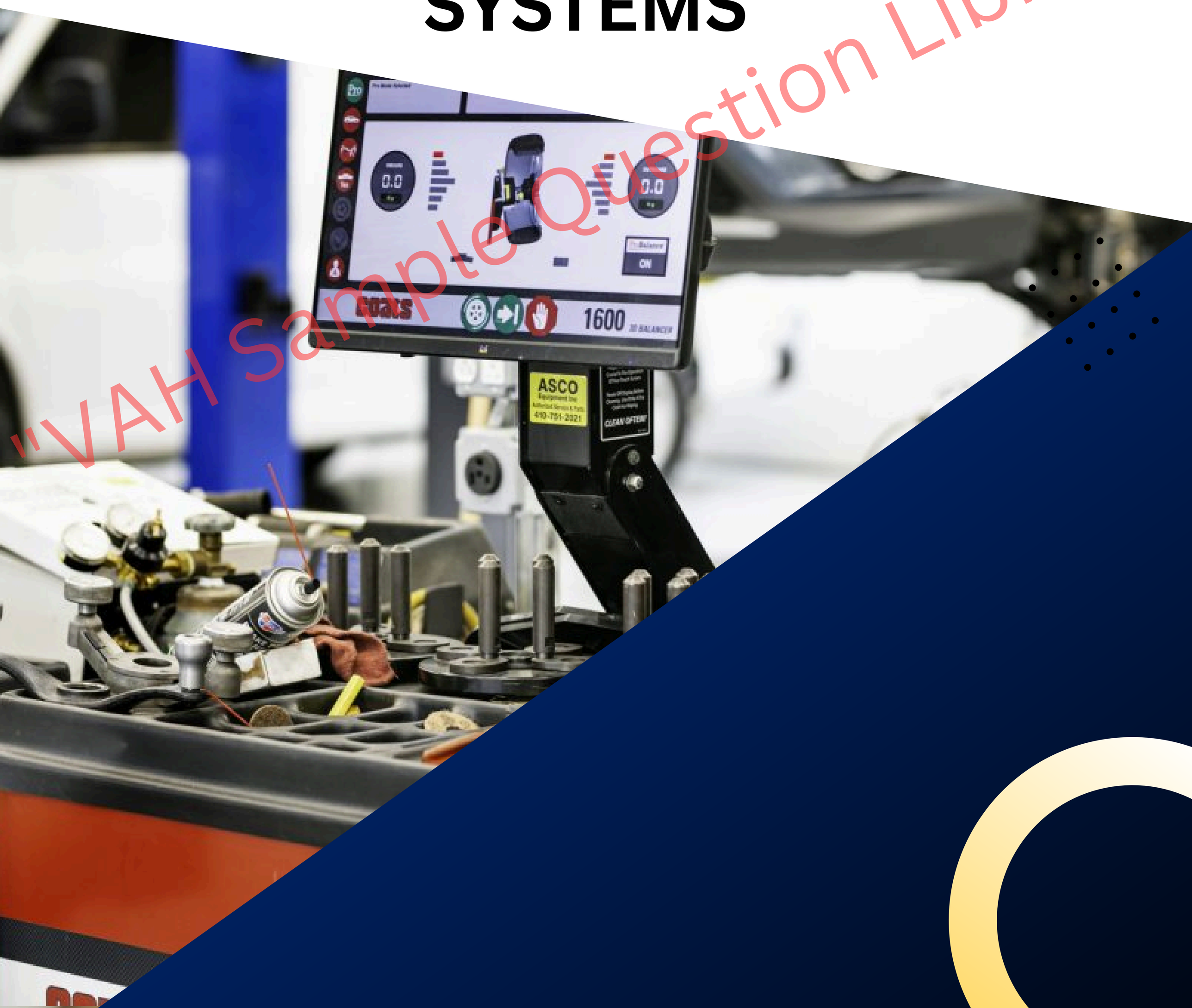
AURETR122

DIAGNOSE AND REPAIR VEHICLE DYNAMIC CONTROL SYSTEMS



About the You Guide

The assessment Guide contains three (3) parts:

PART 1: Assessment information: This part contains information on the assessment for this unit of competency and how an assessment will be conducted throughout this unit to achieve the competency. It includes:

- Purpose of assessment.
- Elements, performance evidence and knowledge evidence requirements of the unit.
- Conditions, context, required resources and location of the assessment.
- Assessment tasks.
- Outline of evidence to be collected.
- Administration, recording and reporting of the requirements including special adjustments, appeals, reasonable adjustments and assessors' intervention.

PART 2: Assessment tasks: This part contains the information to successfully undertake the assessment task. In each assessment task, yous will find the following information:

- Task instructions.
- Marking checklists
- Information on resources required, where applicable

PART 1: Assessment information

Performance evidence: Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- Prepare to diagnose and repair vehicle dynamic control system
- Diagnose vehicle dynamic control system
- Repair vehicle dynamic control system

- Complete work processes
- Diagnose and repair a fault in each of two of the following dynamic control systems of:
    - One vehicle or machinery with an anti-lock braking system (ABS)
    - One vehicle or machinery with a traction control system (TCS)
    - One vehicle or machinery with an active safety system.
- Carry out diagnostic tests in the course of the above for at least one of the following faults:
    - High resistance in an input system
    - Worn or damaged wiring or connectors
    - Shorted system components.
- Methods to locate and interpret information required to diagnose and repair vehicle dynamic control systems, including:
    - Information provided by customers and supervisors
    - Vehicle dynamic control systems manufacturer specifications
- Workplace procedures required to diagnose and repair vehicle dynamic control systems, including:
    - Establishing the serviceability of tools and equipment
    - Documentation procedures
    - Housekeeping procedures, including:
        - Examination of tools and equipment
        - Storage of equipment
        - Identification, tagging and isolation of faulty equipment
        - Safe disposal of materials
        - Recycling procedures
- Workplace health and safety (WHS) requirements relating to diagnosing and repairing vehicle dynamic control systems, including procedures for:
    - Using specialised tools and equipment
    - Using appropriate personal protective equipment (PPE)
    - Identifying hazards and controlling risks associated with:
        - Working on vehicle high and low voltage ignition systems
        - Wearing jewellery while working around high current wiring systems
- Operating principles of vehicle dynamic control systems and associated components, including:
    - Active roll-over protection
    - Anti-lock braking
    - Brake assist
    - Descent control
    - Electronic brake force distribution
    - Electronic park brake
    - Hill start assist
    - Stability control
    - Traction control
    - Active and passive collision avoidance
    - Lane keeping assist
    - Occupant detection systems
    - Adaptive cruise control
    - Roll-over protection
- Purpose and operation of vehicle dynamic control systems and components, including:
    - ABS, including system inputs, electronic control unit (ECU), ABS modulator, and system outputs
    - TCS, including system inputs, ECU, and system outputs, including associated throttle and braking system controls

    - Electronic stability control (ESC), including system inputs, including yaw and steering angle sensors, and ECU and system outputs, including associated throttle and braking system controls
- Diagnostic testing procedures for vehicle dynamic control systems, including:
    - Accessing and interpreting scan tool system data, including:
        - Diagnostic trouble codes (DTCS)
        - Live data
        - Waveforms
    - Using diagnostic flow charts
    - Testing electrical systems, including procedures for:
        - Accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
        - Determining damage to system wiring and connectors
- Repair procedures for vehicle dynamic control systems, including:
    - Connector removal and replacement procedures
    - Removal and replacement procedures for vehicle dynamic control system components
    - Calibration and re-setting procedures
- Post-repair testing procedures for vehicle dynamic control systems, including:
    - DTC clearing procedures
    - Checking for electrical connector mating.

Individuals must be able to demonstrate knowledge of:

- Knowledge of methods to locate and interpret information required to diagnose and repair vehicle dynamic control systems, including:
    - information provided by customers and supervisors
    - vehicle dynamic control systems manufacturer specifications
- Knowledge of workplace procedures required to diagnose and repair vehicle dynamic control systems, including:
    - establishing the serviceability of tools and equipment
    - documentation procedures
    - housekeeping procedures, including:
        - examination of tools and equipment
        - storage of equipment
        - identification, tagging and isolation of faulty equipment
        - safe disposal of materials
        - recycling procedures
- Knowledge of workplace health and safety (WHS) requirements relating to diagnosing and repairing vehicle dynamic control systems, including procedures for:
    - using specialised tools and equipment
    - using appropriate personal protective equipment (PPE)
    - identifying hazards and controlling risks associated with:
        - working on vehicle high and low voltage ignition systems
        - wearing jewellery while working around high current wiring systems
- Knowledge of operating principles of vehicle dynamic control systems and associated components, including:
    - active roll-over protection
    - anti-lock braking
    - brake assist
    - descent control
    - electronic brake force distribution
    - electronic park brake

    - hill start assist
    - stability control
    - traction control
    - active and passive collision avoidance
    - lane keeping assist
    - occupant detection systems
    - adaptive cruise control
    - roll-over protection
- Knowledge of purpose and operation of vehicle dynamic control systems and components, including:
    - ABS, including system inputs, electronic control unit (ECU), ABS modulator, and system outputs
    - TCS, including system inputs, ECU, and system outputs, including associated throttle and braking system controls
    - electronic stability control (ESC), including system inputs, including yaw and steering angle sensors, and ECU and system outputs, including associated throttle and braking system controls
- diagnostic testing procedures for vehicle dynamic control systems, including:
    - accessing and interpreting scan tool system data, including:
        - diagnostic trouble codes (DTCs)
        - live data
        - waveforms
- Knowledge of using diagnostic flow charts
- Knowledge of testing electrical systems, including procedures for:
    - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
    - determining damage to system wiring and connectors
- Knowledge of repair procedures for vehicle dynamic control systems, including:
    - connector removal and replacement procedures
    - removal and replacement procedures for vehicle dynamic control system components
    - calibration and re-setting procedures
- Knowledge of post-repair testing procedures for vehicle dynamic control systems, including:
    - DTC clearing procedures
    - checking for electrical connector mating.

Context and conditions for assessment:

- Training will be conducted in blended delivery mode on a full-time basis in a classroom and automotive workplace environment.
- Classrooms for the theory component of the course will be delivered at campus location.
- The practical component of the course will be delivered in the simulated environment i.e., AIT Automotive Workshop. The location is identified in the timetable.

Please Note:

- Workshop suitability will be conducted to determine the suitability of the venue, including equipment and documents specified AURRTR010 – Repair wiring harnesses and looms.

Resources required: The assessor will ensure that the assessment is conducted in a safe environment and that yous have access to the following resources for the unit.

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer instrument and warning system specifications
- two different vehicles, vessels or machinery with instrument and warning system faults
- diagnostic equipment for instruments and warning systems, including multimeter
- tools, equipment and materials appropriate for repairing vehicle, vessel or machinery instruments and warning systems.

Clustering/holistic assessment: There is no provision for clustering of assessments in this unit.

- **Competency requirements:** To be judged competent in this unit, a you will be required to demonstrate all indicators which are shown in the Marking Guides given with each task (assessor's document).

Yous must satisfactorily complete all assessment tasks to be Competent (C) in the unit. Yous with unsatisfactory completion of any of the assigned tasks will be deemed Not Yet Competent (NYC).

Assessors will ensure that the evidence collected meets the requirements of the Rules of Evidence (authentic, current, sufficient and valid) prior to entering results into the competency record sheet.

Yous unsuccessful at achieving competency at the first attempt will be given two further opportunities for re-assessment at a mutually agreed time and date (a total of 3 attempts, including the original). If a learner fails the re-assessment after three attempts, they will be advised to re-enrol in the unit. Refer to the institute's Assessment Policy and Procedures for more details.

Assessment Task 1: **Knowledge test**	• Answers to all questions provided in the knowledge test • Completed cover sheet for assessment task with date and signatures.
Assessment Task 2: **Skills demonstration**	• Identifying job requirements from workplace instructions • Identifying required information for diagnosis activity • Analysing diagnostic options and source testing strategy to identify the cause of fault using workplace and manufacturer procedures • Identifying hazards and environmental issues associated with the diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures • Identifying tools and equipment required for testing strategy and establish serviceability according to workplace procedures • Implementing diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements • Identifying the cause of fault through analysis of diagnostic test results • Confirming and reporting the cause of fault according to workplace procedures • Developing and reporting recommendations for necessary repairs according to workplace procedures • Identifying required information for repair activity • Identifying required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures • Carrying out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements

	• Carrying out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements • Conducting final inspection according to workplace procedures and confirming vehicle is ready for use • Clearing work area and dispose of or recycle materials according to workplace procedures • Completing documentation according to workplace procedures • Observation Checklist provided for the skills demonstration including task details will be completed by the assessor • Completed cover sheet for each skills demonstration with date and signatures. • Submit the completed job card to your trainer.

Administration, recording and reporting requirements:

Please read all the information before you proceed to complete the assessment tasks. If you do not understand any part of these instructions, please inform your assessor/trainer.

Yous who present copied or plagiarized assessments are considered participants in the act of academic misconduct which would lead to disqualification of their submitted work. (Read the section on Plagiarism, Cheating and Assessment Dishonesty below).

The assessments are intended to be equitable, fair and flexible. All the information, skills and knowledge being assessed by the assessments have been based on theory, practical and skills delivered to your trainer during classes, and meet the requirements of the unit of competency.

Retaining assessment records

- Austin Institute will securely retain all completed you assessment items for a period of six months from the date on which the judgement of competence for the learner was made. Austin Institute will also retain sufficient data to be able to reissue AQF certification documentation for a period of 30 years.

Submitting Assessment Tasks

- You must submit assessment tasks with the provided cover sheet. Work submitted without a coversheet will be returned unmarked.
- ALL tasks must be completed in legible English. It is preferred that the tasks submitted for assessments are typed.
- You must submit all assessments on or before the due date specified by the assessor as per the training plan.
- Extensions for individual assessment tasks may be negotiated in specific circumstances with your assessor/trainer. However, you need to provide genuine evidence documents when seeking an extension to due date (e.g. extensions due to illness will require a medical certificate). To arrange an extension, you must speak to your assessor prior to the due date. Extensions must be confirmed by the trainer in writing.
- You are permitted to use dictionaries and to seek support (as required) unless it puts in jeopardy the integrity of the assessment, your assessor will let you know if this is the case.
- Unless the assessment task specifically allows pair work or group activities such as brainstorming, you must submit your own original work and must not copy the work of other yous. Plagiarism is unacceptable.
- You must complete the you's declaration.

Assessment Outcomes

- There are two outcomes on the assessment task level: S = Satisfactory and NS =Satisfactory (requires more training and experience).
- You must satisfactorily complete all assessment tasks to be deemed Competent (C) in this unit. Yous with not yet satisfactory completion of any of the assigned tasks will be deemed Not Yet Competent (NYC).

Assessment Task 1 - Knowledge Test

Provide your response to each question in the box below.

Q1:	1.1 Where can you find the information required in the table below? 1.2 Where can you find the information provided by the customer or your supervisor that you will need for diagnosing and repairing vehicle dynamic control systems? Give three (3) examples. 1.3 List three (3) methods you can use to locate the required information to diagnose and repair the vehicle dynamic control systems.	Satisfactory response	
		Yes ☐	**No** ☐

Item	**Location** **List three (3) examples**	**Content** **List three (3) examples**
Workplace procedures related to diagnosis and repair of vehicle dynamic control systems?		
Manufacturer specifications related diagnosis and repair of vehicle dynamic control systems?		

1.1

Q2:	2.1 Explain the workplace procedures required to diagnosis and repair a vehicle dynamic control system, listed in the table below. 2.2 Describe the housekeeping procedures required when diagnosing and repairing vehicle dynamic control systems, listed in the table below.	**Satisfactory response**	
		Yes ☐	**No** ☐

2.1

Establish serviceability of tools and equipment. Answer using 10 - 30 words.	
Documentation procedures Answer using 10 - 30 words.	

2.2

Examination of tools and equipment Answer using 10 - 30 words.	
Storage and examination of equipment procedures Answer using 10 - 30 words.	
Identification, tagging and isolation of faulty equipment procedures. Answer using 10 - 30 words.	
Safe disposal of excess material procedures Answer using 10 - 30 words.	
Recycling procedures Answer using 10 - 30 words	

Q3:	Describe the following Workplace Health and Safety requirements for the items listed in the table below.	Satisfactory response	
		Yes ☐	**No** ☐

Using specialised tools and equipment List two (2)	

Using appropriate personal protective equipment (PPE) List four (4)	
Identifying hazards and controlling risks associated with working on vehicles with high and low voltage ignition systems List three (3)	
Identifying hazards and controlling risks associated with wearing jewelry while working around high current wiring systems	<table><tr><td>Identified Hazards List two (2)</td><td>Associated Risks List four (4)</td></tr><tr><td></td><td></td></tr></table>

Q4:	Describe the operating principles of the following vehicle dynamic control systems and associated components: ▪ Active roll over protection ▪ Anti-lock braking ▪ Brake assist ▪ Descent control ▪ Electronic brake force distribution ▪ Electronic park brake ▪ Hill-start assist ▪ Stability control ▪ Traction control ▪ Active and passive collision avoidance ▪ Lane keeping assist. ▪ Occupant detection systems ▪ Adaptive cruise control ▪ Roll-over protection.	Satisfactory response	
		Yes ☐	**No** ☐

SYSTEMS AND ASSOCIATED COMPONENTS	FUNCTION AND OPERATION
Active roll over protection (ARP). Answer using 50-100 words total.	
Anti-lock braking. Answer using 50-100 words	

total.	
Brake assist Answer using 50-100 words total.	
Descent control (HDC) Answer using 50-100 words total.	
Electronic brake force distribution (EBD) Answer using 100-150 words in total	
Electronic park brake (EPB). Write your answer using 20 - 50 words in total	
Hill-start assist (HAS). Write your answer using 50 - 100 words in total	
Stability control (ESC) Write your answer using 50 - 100 words in total	
Traction control (TCS). Write your answer using 50 - 100 words in total	
Active and passive collision avoidance (VCA). Write your answer using 80-120 words in total	
Lane keeping assist (LKS). Write your answer using 50 - 100 words in total	
Occupant detection systems (ODC). Write your answer using 80 - 120 words in total	
Adaptive cruise control (ACC) Write your answer using 50 – 100 words in total	
Roll-over protection (ARP). Write your	

answer using 50 – 100 words in total	

Q5:	Describe the purpose and operation of vehicle dynamic control systems and components listed in the table below.	**Satisfactory response**	
		Yes ☐	**No** ☐

CONTROL SYSTEMS AND COMPONENTS	**PURPOSE AND OPERATION**
5.1 ABS, including system inputs, electronic control unit (ECU), ABS modulator and system outputs. Answer using 50 - 100 words.	
5.2 TCS, including system inputs, electronic control unit (ECI), ABS modulator and system outputs including associated throttle and braking system controls. Answer using 50 - 100 words in total.	
5.3 Electronic stability control (ESC). Including system inputs, including yaw and steering angle sensors, and ECU and system outputs, including associated throttle and braking system controls. Answer using 100 - 150 words.	

Q6:	**Describe the testing procedures for vehicle dynamic control systems including accessing and interpreting scan tool system data as listed in the table below.**	Satisfactory response	
		Yes ☐	**No** ☐

Diagnostic trouble codes (DTC) Answer using 50 - 100 words	
Waveforms Answer using 20 - 50 words	
Live Data Answer using 20 - 50 words	

Q7:	Describe the testing procedure for vehicle dynamic control system including using flow charts. Answer using 80-100 words.	**Satisfactory response**	
		Yes ☐	**No** ☐

Q8:	Describe the testing procedures for vehicle dynamic control systems listed in the table below.	**Satisfactory response**	
		Yes ☐	**No** ☐

:

Accessing electrical terminals and using probes without damaging connectors, fuse holders or wiring. Answer using 30 - 50 words.	
Determining damage to system wiring and connectors Answer using 50-100 words.	

Q9:	Describe the repair procedures for vehicle dynamic control systems, including the those in the table below.	**Satisfactory response**	
		Yes ☐	**No** ☐

Connector removal and replacement procedure Answer using 50 - 100 words.	
Removal and replacement procedures for vehicle dynamic control system components Answer using 30-50 words.	
Calibration and resetting procedures. Answer using 30-50 words.	

Q10:	**Describe the post repair procedures for vehicle dynamic control systems including those listed in the table below.**	Satisfactory response	
		Yes ☐	**No** ☐

DTC Clearance procedures Answer using 50 - 100 words	
Checking for electrical connector mating Answer using 50 -100 words	

AT2 – Skills Demonstration

Unit Title: Diagnose and repair vehicle dynamic control systems		**Unit Code: AURETR122**
Assessment Method	The purpose of this assessment is to assess your knowledge and skills with regards to • Identifying job requirements from workplace instructions	

and Description	• Identifying required information for diagnosis activity • Analysing diagnostic options and source testing strategy to identify the cause of fault using workplace and manufacturer procedures • Identifying hazards and environmental issues associated with the diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures • Identifying tools and equipment required for testing strategy and establish serviceability according to workplace procedures • Implementing diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements • Identifying the cause of fault through analysis of diagnostic test results • Confirming and reporting the cause of fault according to workplace procedures • Developing and reporting recommendations for necessary repairs according to workplace procedures • Identifying required information for repair activity • Identifying required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures • Carrying out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements • Carrying out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements • Conducting final inspection according to workplace procedures and confirming vehicle is ready for use • Clearing work area and dispose of or recycle materials according to workplace procedures • Completing documentation according to workplace procedures
Context of assessment	This assessment will be conducted in the workshop at the date and time agreed upon between yous and the assessor with access to equipment and resources outlined below.
Resources Required	The following resources must be made available: ▪ automotive repair workplace or simulated workplace ▪ work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: ▪ using safety data sheets (SDS) ▪ selecting and using personal protective equipment (PPE) ▪ identifying firefighting equipment ▪ safely handling hazardous materials and toxic substances ▪ following soldering equipment safe operating procedures ▪ environmental requirements, including procedures for trapping, storing and disposing of hazardous materials and toxic substances released during repair processes. ▪ workplace instructions ▪ Manufacturer specifications for electronically controlled steering systems ▪ Two (2) different vehicles or machinery with faults in the electronically controlled steering system components specified in the performance evidence ▪ Diagnostic equipment for electronically steering controlled system, including: ▪ multimeter ▪ scan tool ▪ Tools, equipment and materials appropriate for repairing the electronically controlled steering systems of vehicle and machinery ▪ The simulated environment consists of:

	▪ The training organisation as the workplace where the you will be required to complete their job-related tasks and activities ▪ The standard operating/workplace procedures related to the training organisation ▪ The trainer/assessor will provide the you with assistance throughout the assessment activity. ▪ The simulated environment must meet the following criteria: ▪ Follow standard operating/workplace procedures ▪ Use up-to-date software and equipment ▪ Work within stated timelines to meet deadlines ▪ Gain experience in the challenges and complexities of dealing with multiple tasks ▪ Experience prioritising competing tasks and dealing with contingencies ▪ Simulated environment to work with others in a team ▪ Simulated environment sufficient to communicate, contribute and participate in tasks and activities ▪ Simulated environment sufficient to work independently and manage workload
Instructions to the You	• This is an individual assessment. • To ensure the responses are satisfactory, you can consult a range of learning resources and other information such as handouts, textbooks, learner guides, workplace procedures etc. • All tasks and activitites must be completed in order to gain competency for this assessment. • You must complete all activities in this task. • This is an individual assessment. • You are required to diagnose and repair a fault in each of two of the following dynamic control systems of; ▪ one vehicle or machinery with an anti-lock braking system (ABS) ▪ one vehicle or machinery with a traction control system (TCS) ▪ one vehicle or machinery with an active safety system. ▪ carry out diagnostic tests in the course of the above for at least one of the following faults: ▪ high resistance in an input system ▪ worn or damaged wiring or connectors ▪ shorted system components. • To ensure the responses are satisfactory, you can consult a range of learning resources and other information such as handouts, textbooks, learner guides etc. • You must complete all activities in this task.

Task 1 Simulated assessment scenario

You are required to diagnose and repair vehicle dynamic control systems. You are required to read and understand a predetermined issue and/or situation and participate in a number of assessment activities.

The following are the activities you need to complete in this assessment task:

- Identify the job requirements from workplace instructions
- Identify the information required for the diagnosis activity
- Analyse diagnostic options and source a testing strategy to identify the cause of fault using workplace and manufacturer procedures
- Identify hazards and environmental issues associated with the diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures
- Identify the tools and equipment required for the testing strategy and establish serviceability according to workplace procedures
- Implement the diagnostic tests set out in the testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements
- Identify the cause of fault through analysis of the diagnostic test results
- Confirm and report the cause of fault according to workplace procedures
- Develop and report recommendations for necessary repairs according to workplace procedures
- Identify the information required for the repair activity
- Identify the repair tools, equipment and materials required for the repair activity and establish serviceability according to workplace procedures
- Carry out the repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements
- Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
- Conduct a final inspection according to workplace procedures and confirm vehicle is ready for use
- Clear the work area and dispose of or recycle materials according to workplace procedures
- Complete the documentation according to workplace procedures

A supervisor will be assigned to you by your training organisation. The supervisor can answer your questions related to understanding the requirements associated with the assessment task. The supervisor will act according to job role and responsibilities.

The supervisor can be your trainer or assessor or a different trainer or assessor or a staff member (including mentors) from the training organisation.

Roles and responsibilities

As part of your job role, you have the following responsibilities:

- Locate required sources of information efficiently
- Develop a sequenced plan for a specific task
- Organise and interpret technical information from workplace procedures, manufacturer procedures and manufacturer specifications
- Interpret text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
- Clarify instructions
- Obtain information from customers and supervisors

- Match electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications
- Interpret vehicle electrical measurements and readings
- Measure voltage, current and resistance and uses mathematical operations
- Calculate deviations from manufacturer specifications
- Plan own work requirements
- Prioritise actions to achieve required outcomes
- Ensure tasks are completed within workplace timeframes
- Use specialised diagnostic equipment

Task 2 Simulated assessment scenario

You are working in an automotive workshop. Two (2) clients have brought in two (2) different vehicles that require diagnosis and repairs to the vehicle's dynamic control systems. Each vehicle or machinery will have a different fault.

As part of your job role, you have the following job responsibilities:

- Locate required sources of information efficiently
- Develop a sequenced plan for a specific task
- Organise and interpret technical information from workplace procedures, manufacturer procedures and manufacturer specifications
- Interpret text, symbols and wiring diagrams in information relating to electrical system testing and repair equipment from manufacturer specifications and workplace instructions and procedures
- Clarify instructions
- Obtain information from customers and supervisors
- Match electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications
- Interpret vehicle electrical measurements and readings
- Measure voltage, current and resistance and uses mathematical operations
- Calculate deviations from manufacturer specifications
- Plan own work requirements
- Prioritise actions to achieve required outcomes
- Ensure tasks are completed within workplace timeframes
- Use specialised diagnostic equipment

Your task is to diagnose and repair a fault that can be in any of the following dynamic control systems:

- one vehicle or machinery with an anti-lock braking system (ABS) or
- one vehicle or machinery with a traction control system (TCS) or
- one vehicle or machinery with an active safety system.

You are also required to carry out diagnostic tests in the course of the above for one of the following faults:

- high resistance in an input system or
- worn or damaged wiring or connectors or
- shorted system components.

Your assessor will be acting as your supervisor and delegate work to you.

The work will be delegated to you from your supervisor (trainer/assessor) as per the activities listed in this assessment task. The descriptions of the activities are mentioned below. Your trainer/assessor will observe you when you are completing the activities and evaluate your performance based on benchmarking in the performance checklists.

Your trainer/assessor will advise you which complex fault you will be required to diagnose for this assessment task and on which vehicle dynamic control systems you are to make the diagnosis.
The fault will be different on each vehicle.

After each activity, you will find a Performance Checklist. The list outlines the tasks you need to perform, and your supervisor (your assessor) will observe. These assessment tasks are given to you as repair orders.

You need to:

- Identify the job requirements from workplace instructions
- Identify the information required for the diagnosis activity
- Analyse diagnostic options and source a testing strategy to identify the cause of fault using workplace and manufacturer procedures
- Identify hazards and environmental issues associated with the diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies and procedures
- Identify the tools and equipment required for the testing strategy and establish serviceability according to workplace procedures
- Implement the diagnostic tests set out in the testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements
- Identify the cause of fault through analysis of the diagnostic test results
- Confirm and report the cause of fault according to workplace procedures
- Develop and report recommendations for necessary repairs according to workplace procedures
- Identify the information required for the repair activity
- Identify the repair tools, equipment and materials required for the repair activity and establish serviceability according to workplace procedures
- Carry out the repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements
- Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements
- Conduct a final inspection according to workplace procedures and confirm vehicle is ready for use
- Clear the work area and dispose of or recycle materials according to workplace procedures
- Complete the documentation according to workplace procedures

You need to read the supervisor's instructions on the repair order underneath, discuss the tasks listed with your supervisor for clarification and fill the vehicle's details and other information on top of the repair order before starting the work. Your supervisor will provide you with a time limit for finishing the activities.

You must also fill out the following documents:

- The Testing Strategy Template to outline the test strategy you are going to use.
- The Diagnose Preparation template to outline the tests you are going to perform.
- The Preliminary Inspection Report to record the outcomes of your testing.
- The Repair Template which outlines how your repair work will be assessed.
- The Post-Repair testing template to confirm the status of the instrument and warning systems, if a final inspection has been completed, systems presented ready for use, tools checked and stored, and all workplace documentation processed.
- Finalise the information on the Repair Order.

Activity 1:

Repair Order 1

Business Name: ABCD Motors **Address:** 22 Spring Grove Sunshine **Phone:** 7125 2356 **ABN#:** 923 556 412 **Technician's Name:** **Technician' signature:**	**R/O #: 001** **Date:**
Customer's details Full name: Address: Contact number: Date: Customer's declaration: By signing this repair order I give my consent to ABCD automotive to diagnose and repair the vehicle dynamic control systems at my cost. Signature:	**System's details** Make: Model: Year: Colour: I.D. Number #: Vehicle Chassis #: ODO/Millage:
Concern: <u>Supervisor's instruction</u>: • Collect the information required for the diagnosis • Analyse options and source a testing strategy • Implement the diagnostic tests • Identify the cause of fault • Confirm and report the cause of fault • Develop and report your recommendations for necessary repairs • Carry out the repairs • Carry out post-repair testing • Conduct a final inspection • Complete the documentation	
Cause:	
Rectification:	
Recommendation:	
Parts used (if any) and quantity:	

Testing Strategy Template Source a testing strategy to diagnose the cause of faults.	
Explain how you identified the Job Requirements. Write your answer using 50 – 100 words.	
List the information you required for the diagnosis activity.	
Explain how you analyse the diagnostic options and source a testing strategy to identify the cause of fault. Write your answer using 200 – 250 words.	
Select your testing strategy/ies and explain the reasoning behind your choice. Write your answer using 100 – 150 words.	

Diagnose Preparation Template	
Diagnostic option/s selected	Reason to use this specific diagnostic option
Tools, equipment and material required for the testing and repair work	

Tool, equipment and material name	Used for	Checked Y/N
PPE Required for testing and repairs		

Hazards identified	Safety Measures

Preliminary Inspection Report

Date:

Time

Vehicle Identification number:

Odometer reading:

Last service date:

Preliminary inspection conducted by:

Job assigned to mechanic:

Serial No	Inspection	Result/Findings	Manufacturer Specifications	Recommendations

Analysis of faults based on diagnostic test results
Cause of fault confirmed
Recommended repairs

Reported to	
Date	

Repair template

Access the following documentation prior to the repair work:

- Workplace procedures
- Manufacturer procedures and specifications
- Workplace health and safety requirements

• Environmental requirements		
Did you:	**Yes/No**	**Outline the work you completed.** Include the technical information you sourced from workplace procedures, manufacturer procedures and specifications, diagrams, workshop literature either as links or attachments. Copies of any diagrams used with information related to dynamic control system testing and repair equipment from manufacturer specifications and workplace instructions and procedures either as links or attachments. You need to also include; Matches of electrical components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications Your interpretations of vehicle electrical measurements and readings Any measures of voltage, current and resistance and use of mathematical operations Any calculations of deviations from manufacturer specifications The details must include the diagnose and repair procedure and include: • The diagnose and repair of the fault in the dynamic control system component/s • The details of the diagnostic testing
Carry out repairs according to workplace procedures? You must ensure that you have a current copy of the workplace procedures provided to you from your workplace to safely carry out the repairs.		
Carry out repairs according to manufacturer procedures and specifications? You must ensure that you have a current copy of the manufacturers' procedures and specifications provided to you from your workplace to safely carry out the repairs.		

Carry out repairs according to work, health and safety requirements? You must ensure that you have read the current WHS/OHS Act to ensure you understand the health and safety requirements in your workshop. You must also ensure that you have access to and have read the workplace WHS/OHS policies and procedures.		
Carry out repairs according to environmental requirements? You must ensure that you have read the current environmental and sustainability guidelines and practices to ensure you understand the requirements in your workshop. E.g., Noise minimisation, air pollution, environmental purchasing practices, use of natural resources, recycling water, waste and any other materials and resources used and energy conservation practices. You must also ensure that you have access to and have read the workplace environmental and sustainability policies and procedures.		

Post-Repair Testing **Date: __/__/_____**	
Vehicle Identification Number:	Odometer reading:
Vehicle owner's name and address:	Technician name & number
Problem reported:	
Action taken:	

Visual inspection comments:	
Type of post-service testing carried out:	
Remarks	
Final inspection carried out vehicle presented ready for use:	YES/NO
Work area cleaned, waste and non-recyclable material disposed of and recyclable material collected	YES/NO
Tools and equipment checked and stored	YES/NO
Workplace documentation processed and completed	YES/NO
Technician Signature	Date:

Performance Checklist

Your task must address the following performance checklist.			
To be assessed as satisfactory (S) in this assessment task the participant needs to demonstrate competency in the following critical aspects of evidence. Did the you:	S	N/S	Trainer/Assessor to complete (Comment and feedback to yous)
a) Determine job requirements according to workplace instructions?	❑	❑	
b) Identify the information required for the diagnosing activity?	❑	❑	
c) Analyse diagnostic options and source testing strategy to identify the cause of fault?	❑	❑	
d) Identify hazards and environmental issues associated with the diagnose and repair activity assess potential risks and implement control measures?	❑	❑	

e) Identify and select tools, equipment and materials required to support the diagnostic process and prepared for use?	❑	❑	
f) Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures and workplace health and safety requirements?	❑	❑	
g) Identify the cause of fault through analysis of diagnostic test results?	❑	❑	
h) Confirm and report cause of fault according to workplace procedures?	❑	❑	
i) Develop and report recommendations for necessary repairs according to workplace procedures	❑	❑	
j) Identify the information required for repair activity?	❑	❑	
k) Identify repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures?	❑	❑	
l) Carry out repairs?	❑	❑	
m) Carry out post-repair testing?	❑	❑	
n) Conduct final inspection to ensure work is to workplace expectations and present the systems ready for use?	❑	❑	
o) Clear the work area, dispose of or recycle materials?	❑	❑	