-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

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NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number- **2210152** **-Session-1992-93**
-Superclass- **XS**

-Title- **VEHICLE CHASSIS AND TRANSMISSION ELECTRONIC SYSTEMS**

-DESCRIPTION-

Purpose

This module is designed to enable candidates to develop the knowledge and skills required to adjust, test and repair chassis and transmission systems fitted to light road vehicles.

It is intended for experienced persons employed in the servicing and repair of road vehicles and is complimentary to the specialised courses operated by vehicle manufacturers and ancillary equipment manufacturers.

Preferred Entry Level

94381	Braking Systems: Condition Assessment and Fault Diagnosis
94388	Suspension Systems (Mechanical): Removal, Replacement and Adjustment of Components
2210330	Final Drives and Drive Shafts: Condition Assessment and Fault Diagnosis
2210091	Introduction to Vehicle Electrical/ Electronic Principles: Testing and Measurement.

Outcomes

The candidate should:

1. outline the function of the components of an electronic anti-lock braking system;

2. outline the function of the components of an electronic active suspension system;

3. outline the function of the components of an electronic traction control system;

4. assess the condition of chassis and transmission electronic systems.

Assessment Procedures

Acceptable performance in this module will be satisfactory achievement of all the Performance Criteria specified for each Outcome.

The following abbreviations are used below:

PC Performance Criteria
IA Instrument of Assessment

Note: The Outcomes and PCs are mandatory and cannot be altered. The IA may be altered by arrangement with SQA. (Where a range of performance is indicated, this should be regarded as an extension of the PCs and is therefore mandatory.)

OUTCOME 1 **OUTLINE THE FUNCTION OF THE COMPONENTS OF AN ELECTRONIC ANTI-LOCK BRAKING SYSTEM**

PCs

(a) The identification of the location of the components is correct for a specified make and type of system.
(b) The naming of the components is correct for a specified make and type of system.
(c) The identification of the functions of the components is correct for a specified make and type of system.

IA Objective Test

The candidate will be presented with an exercise consisting of short answer questions to test the application of knowledge and skills to the visual identification and recognition of the functions of the components.

The test will take the form of 2 short answer questions on each of the following components, when fitted to the system being assessed.

Components to be included:

1, 2, 3 and 4 channel system;
wheel speed sensors;
brake control valves;
wiring;
electronic control unit.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the candidate producing correct responses to all the questions included in the assessment.

OUTCOME 2 **OUTLINE THE FUNCTION OF THE COMPONENTS OF AN ELECTRONIC ACTIVE SUSPENSION SYSTEM**

PCs

(a) The identification of the location of the components is correct for a specified make and type of system.
(b) The naming of the components is correct for a specified make and type of system.
(c) The identification of the functions of the components is correct for a specified make and type of system.

IA Objective Test

The candidate will be presented with an exercise consisting of short answer questions to test the application of knowledge and skills to the visual identification and recognition of the functions of the components.

The test will take the form of 2 short answer questions on each of the following components, when fitted to the system being assessed.

Components to be included:

1 and 2 channel systems;
suspension movement sensors;
control unit;
control valves;
hydraulic spring units;
damper units;
damper control valves;
spring units.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the candidate producing correct responses to all the questions included in the assessment.

OUTCOME 3 **OUTLINE THE FUNCTION OF THE COMPONENTS OF AN ELECTRONIC TRACTION CONTROL SYSTEM**

PCs

(a) The identification of the location of the components is correct for a specified make and type of system.
(b) The naming of the components is correct for a specified make and type of system.
(c) The identification of the functions of the components is correct for a specified make and type of system.

IA Objective Test

The candidate will be presented with an exercise consisting of short answer questions to test the application of knowledge and skills to the visual identification and recognition of the functions of the components.

The test will take the form of 2 short answer questions on each of the following components, when fitted to the system being assessed.

Components to be included:

wheel speed sensors;
electronic control unit;
differential control valves;
differential unit;
driver's controls.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the candidate producing correct responses to all the questions included in the assessment.

OUTCOME 4 **ASSESS THE CONDITION OF CHASSIS AND TRANSMISSION ELECTRONIC SYSTEMS**

PCs

(a) The information selected to carry out a systematic assessment is correct for the system to be tested.
(b) The choice of test equipment permits the systematic testing of the system in accordance with the selected information.
(c) The procedures used to identify the existence of a fault are in accordance with the manufacturer's instructions.
(d) The procedures used to locate a fault are in accordance with the manufacturer's instructions.
(e) The use of test equipment is in accordance with the manufacturer's instructions.
(f) The recording of test readings to identify faulty components is sufficiently accurate to enable the readings to be correctly compared with the manufacturer's data.
(g) The identification of rectification work required from the test diagnosis is in accordance with the manufacturer's repair procedures.

IA Practical Exercise

The candidate will be presented with a Practical Exercise to test the application of knowledge and skills to the assessment of the condition of 1 example of each of the following:

electronic anti-lock braking system;
electronic active suspension system;
electronic traction control system.

Satisfactory achievement of the Outcome will be based on all Performance Criteria being met. This will be demonstrated by the candidate correctly assessing the condition of each of the systems listed above and recommending remedial action in accordance with manufacturer's repair procedures.

The following sections of the descriptor are offered as guidance.
They are not mandatory.

CONTENT/CONTEXT

Safety regulations and safe working practices must be emphasised at all times including the risk of damage to electrical and electronic components by incorrect polarity, overloading and high temperatures.

SUGGESTED LEARNING AND TEACHING APPROACHES

All Outcomes should be taught in a workshop environment with access to a range of up-to-date vehicles, test equipment, components and technical publications.

The selection of practical work should reflect the types of vehicle the candidate will most commonly deal with at work.

The requirements of any Industry Body such as the RTITB Transkill Scheme should be investigated for inclusion and assessment in the module.

09/02/98 JH/DA