-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION

GENERAL INFORMATION

-Module Number- **2210167** **-Session-1997-98**

-Superclass- **ZJ**

-Title- **MOTOR VEHICLE INSPECTION: LIGHT VEHICLES AND MOTORCYCLES**

-DESCRIPTION-

GENERAL COMPETENCE FOR UNIT: Carrying out full vehicle road side inspections of passenger cars, light goods vehicles and motorcycles, identifying, evaluating, and recording defects.

OUTCOMES

1. prepare to carry out an inspection;
2. identify type of construction and faults related to the frame and bodywork;
3. identify faults related to the engine, exhaust and fuel systems;
4. identify faults related to the steering and suspension;
5. identify faults related to the brakes, wheels, tyres, and transmission;
6. identify faults related to the lights, auxiliaries and instruments;
7. present a formal report of an inspection.

CREDIT VALUE: 1 NC Credit

ACCESS STATEMENT: Candidates should have a basic understanding of light vehicle and motorcycle constructions and systems.

For further information contact: Committee and Administration Unit, SQA, Hanover House, 24 Douglas Street, Glasgow G2 7NQ.

Additional copies of this unit may be purchased from SQA (Sales and Despatch section). At the time of publication, the cost is £1.50 (minimum order £5.00).

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION

STATEMENT OF STANDARDS

UNIT NUMBER: 2210167

UNIT TITLE: MOTOR VEHICLE INSPECTION: LIGHT VEHICLES AND MOTORCYCLES

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME

1. PREPARE TO CARRY OUT AN INSPECTION

PERFORMANCE CRITERIA

(a) Inspection site selected has sufficient space and is free from hazards.
(b) Equipment selected will enable a full inspection to be completed safely.
(c) Support information selected is appropriate for the required inspection.
(d) Vehicle/motorcycle identification information is recorded accurately and completely.

RANGE STATEMENT

Inspections: passenger car in a normal used state; light goods vehicles under 3.5 tonnes gross plated weight in a normal used state; motorcycles in a normal used state.

EVIDENCE REQUIREMENTS

Performance evidence of the presentation of a light vehicle, light goods vehicle and a motorcycle, inspection equipment and support material ready to carry out a full inspection as specified in performance criteria (a) - (c).

Written and/or oral evidence of the candidate's ability to identify hazards associated with carrying out inspections and to record identification information as specified in performance criterion (d).

OUTCOME

2. IDENTIFY TYPE OF CONSTRUCTION AND FAULTS RELATED TO THE FRAME AND BODYWORK

PERFORMANCE CRITERIA

(a) Type of construction is identified correctly.
(b) Load bearing areas are identified correctly.
(c) Methods of inspection and test are used correctly in accordance with Vehicle Inspectorate procedures.
(d) Inspection and test for corrosion weakening identifies all potential hazards.
(e) Inspection and test of body fittings correctly identifies all faults and potential hazards.

RANGE STATEMENT

Inspections: passenger car in a normal used state; light goods vehicles under 3.5 tonnes gross plated weight in a normal used state; motorcycles in a normal used state.

Constructions: unitary; chassis/frame; subframes.

EVIDENCE REQUIREMENTS

Evidence of actual performance of the inspections carried out and the defects identified as specified in performance criteria (c), (d) and (e).

Written and/or oral evidence of the candidate's ability to identify types of construction, load bearing areas as specified in performance criteria (a) and (b).

OUTCOME

3. IDENTIFY FAULTS RELATED TO THE ENGINE, EXHAUST AND FUEL SYSTEMS

PERFORMANCE CRITERIA

(a) Methods of inspection and test are in accordance with relevant procedures.
(b) Visual inspection of the engine correctly identifies all faults and potential hazards.
(c) Inspection and test of the exhaust system correctly identifies all faults and potential hazards.
(d) Visual inspection of the fuel system correctly identifies all faults and potential hazards.

RANGE STATEMENT

Inspections: passenger car in a normal used state; light goods vehicles under 3.5 tonnes gross plates weight in a normal used state; motorcycles in a normal used state.

EVIDENCE REQUIREMENTS

Evidence of actual performance of the candidate's ability to carry out inspections and identify faults as specified in performance criteria (a), (b), (c) and (d).

Written and/or oral evidence of the candidate's understanding of the operation of vehicle systems and potential hazards associated with common faults as specified in performance criteria (b), (c) and (d).

OUTCOME

4. IDENTIFY FAULTS RELATED TO THE STEERING AND SUSPENSION

PERFORMANCE CRITERIA

(a) Methods of inspection are in accordance with the relevant procedures.
(b) Visual inspection of the steering system correctly identifies the type of steering gear.
(c) Inspection of the steering system correctly identifies all faults and potential hazards.
(d) Inspection of the suspension systems correctly identifies the types of front and rear springs and suspension.
(e) Inspection of the suspension systems correctly identifies all faults and potential hazards.
(f) Inspection of the transmission system correctly identifies all faults and potential hazards.

RANGE STATEMENT

Inspections: passenger car in a normal used state; light goods vehicles under 3.5 tonnes gross plated weight in a normal used state; motorcycles in a normal used state.

Vehicle suspensions: non independent; independently.

EVIDENCE REQUIREMENTS

Evidence of actual performance of the candidate's ability to carry out inspections and identify faults as specified in performance criteria (a), (c), (e) and (f).

Written and/or oral evidence of the candidate's ability to identify type(s) of vehicle constructions and potential hazards as specified in performance criteria (b), (e) and (f).

OUTCOME

5. IDENTIFY FAULTS RELATED TO THE BRAKES, WHEELS, TYRES AND TRANSMISSION

PERFORMANCE CRITERIA

(a) Methods of inspection are in accordance with the relevant procedures.
(b) Visual inspection of the braking system correctly identifies the type of brake units and system.
(c) Inspection of the braking system correctly identifies all faults and potential hazards.
(d) A Tapley Brake Performance Test provides accurate information on the brake efficiency.
(e) Visual inspection of the wheels correctly identifies the type of construction of each wheel.
(f) Visual inspection of the tyres correctly identifies the size and type of construction of each tyre.
(g) Inspection of the wheels and tyres correctly identifies all faults and potential hazards.

RANGE STATEMENT

Inspections: passenger car in a normal used state; light goods vehicles under 3.5 tonnes gross plated weight in a normal used state; motorcycles in a normal used state.

EVIDENCE REQUIREMENTS

Evidence of actual performance of the candidate's ability to carry out inspections, identify faults and complete a brake performance test as specified in performance criteria (a), (c) and (g).

Written and/or oral evidence of the candidate's ability to identify type(s) of vehicle constructions and potential hazards as specified in performance criteria (b), (d), (e) and (f).

OUTCOME

6. IDENTIFY FAULTS RELATED TO THE LIGHTS, AUXILIARIES AND INSTRUMENTS

PERFORMANCE CRITERIA

(a) Methods of inspection are in accordance with the relevant procedures.
(b) Visual inspection of the vehicle correctly identifies all the obligatory lamps and auxiliaries.
(c) Inspection and test of the obligatory lamps and auxiliaries correctly identifies all faults and potential hazards.
(d) Inspection and test of the optional lamps and auxiliaries fitted correctly identifies all faults and potential hazards.
(e) Inspection and test of the instruments correctly identifies all faults and potential hazards.

RANGE STATEMENT

Light vehicle: passenger car in a normal used state; light goods vehicles under 3.5 tonnes gross plates weight in a normal used state; motorcycles in a normal used state.

Lamps: obligatory; optional.

EVIDENCE REQUIREMENTS

Evidence of actual performance of the candidate's ability to carry out inspections and identify faults as specified in performance criteria (a), (c), (d) and (g).

Written and/or oral evidence of the candidate's ability to identify types of vehicle lamps and potential hazards as specified in performance criteria (b), (c), (d) and (e).

OUTCOME

7. PRESENT A FORMAL WRITTEN REPORT OF AN INSPECTION

PERFORMANCE CRITERIA

(a) The report is accurate and comprehensive and includes all the defects identified during the vehicle/motorcycle examination.
(b) Statutory offences associated with each defect are correctly stated.
(c) Evidence to support each statutory offence is presented clearly and accurately.
(d) The importance of accuracy and detail in written reports is stated clearly and accurately in terms of providing legal evidence in the event of a prosecution.

RANGE STATEMENT

Statutory offences: construction and use; Road Traffic Acts.

EVIDENCE REQUIREMENTS

Evidence of actual performance of the candidate's ability to complete a formal written report of each of the vehicle inspections pertaining to outcome 1 as specified in performance criteria (a), (b) and (c).

Written and/or oral evidence of the candidate's understanding of the legal implications of vehicle inspection reports as specified in performance criterion (d).

ASSESSMENT

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the SQA assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes).

Accurate records should be made of the assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records of candidates' achievements should be kept. These records will be available for external verification.

SPECIAL NEEDS

In certain cases, modified outcomes and range statements can be proposed for certification. See references at end of support notes.

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION

SUPPORT NOTES

UNIT NUMBER: 2210167

UNIT TITLE: MOTOR VEHICLE INSPECTION: LIGHT VEHICLES AND MOTORCYCLES

SUPPORT NOTES: This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

NOTIONAL DESIGN LENGTH: SQA allocates a notional design length to a unit on the basis of time estimated for achievement of the stated standards by a candidate whose starting point is as described in the access statement. The notional design length for this unit is 40 hours. The use of notional design length for programme design and timetabling is advisory only.

PURPOSE This unit is designed to enable the candidate to develop skills and knowledge related to the full road side inspection of passenger cars, light goods vehicles and motorcycles in order to make decisions regarding their safety and to identify offences arising from the condition of vehicles.

SQA publishes summaries of NC units for easy reference, publicity purposes, centre handbooks, etc. The summary statement for this unit is as follows:

This unit will enable you to acquire the necessary skills and knowledge to inspect passenger cars, light goods vehicles and motorcycles for defects in order to make decisions regarding the safety of these vehicles and possible contraventions of the law regarding their use on a road. You will learn how to inspect passenger cars, light goods vehicles and motorcycles, interpret inspection information and record the results of inspections in order to identify contraventions of the law regarding the use of vehicles on a road.

CONTENT/CONTEXT Corresponding to outcomes 1-7:

Outcome 1

Passenger cars, light goods vehicles under 3.5 tonnes gross plates weight, and motorcycles (with or without sidecar) in a normal used state.

Inspection equipment: vehicle jacks; levers; inspection lamps; access crawlers; protective clothing and equipment.

Support information available should include inspection checklists; vehicle inspectorate testers manuals.

Vehicle/motorcycle identification information should include make model registration mark, mileage, VIN, chassis or frame number colour, type of engine.

Outcome 2

Vehicle constructions: unitary; chassis; subframes.

Motor cycle frames: tubular; composite; alignment; distortion.

Load bearing areas: suspension mountings; body/panel mountings; steering mountings; engine/transmission mountings; sills; subframes and mountings; inner wings (valences); chassis legs; bulkheads.

Vehicle body fittings: seat belts; seat mountings; door locks and hinges; window safety glass; bumpers; mudguards; mascots.

Motor cycle fittings: panels; seats; footrests; luggage carriers; fairings and panels.

Inspection procedures: Vehicle Inspectorate testers manuals.

Outcome 3

Engine faults: oil leakage; coolant leakage; insecure mountings.

Exhaust system faults: insecure mountings; exhaust gas leakage; incomplete system; excessive noise; excessive smoke emission.

Fuel system faults: insecure pipes; insecure tank mountings; fuel leakage; incorrect tank filler cap.

Inspection procedures: Vehicle Inspectorate testers manuals.

Outcome 4

Types of vehicle steering: rack and pinion; steering gear; power assisted; non-assisted.

Motorcycle steering: head bearings; steering dampers; front to rear wheel alignment (if appropriate).

Steering faults: excessive free play; stiff and restricted movement; insecure mountings; leakage of lubricant; damaged rubber gaitors/seals; incorrectly locked nuts, bolts, ball pins; excessive wear of ball joints and steering pivots; damaged or distorted arms or mountings, lack power assistance.

Types of spring: leaf, coil, torsion bar; pneumatic; dampers.

Vehicle suspensions: non independent; independent; anti roll torsion bars; Panhard rods; tie bars.

Motorcycle suspensions: spring and damper locations; leading and trailing arms.

Suspension system faults: excessive free play; insecure mountings; worn or soft mountings; ineffective dampers; broken springs.

Transmission system faults: oil leakage; worn universal joints and splines; insecure mountings; loose chains.

Inspection procedures: Vehicle Inspectorate testers manuals.

Outcome 5

Types of brake units: drum; disc; solid and ventilated discs.

Vehicle braking system: hydraulic; mechanical; servo assisted; single line; dual line.

Motorcycle braking systems: hydraulic; cable; front, rear.

Brake system faults: excessive pedal movement; excessive lever movement; insecure parking brake ratchet; damaged or seized handbrake cables; air in the hydraulic system; sinking brake pedal; fluid leakage; insufficient fluid; worn anti-slip pedal surface; oil/grease on the brake pads/linings; corroded, insecure or damaged brake pipes.

Anti-lock brake systems: operation; sensors.

Types of wheel construction: pressed steel; alloy; well base rim; detachable rim.

Types of tyres and size codes: cross ply; radial ply; bias belt; steel and textile bracing cords; tyre size codes, diameter, width, construction, aspect ratio, direction of rotation.

Wheel faults: loose and missing wheel nuts, studs or bolts; incorrectly fitted wheel nuts; loose wheel nuts or bolts; damaged, distorted or cracked wheels, non standard wheel sizes; mixed wheel sizes.

Tyre faults: abnormal wear, over inflation, under inflation, scrubbing, edge wear; damage, bulges, cuts, ply separation, side wall scuffing.

Inspection procedures: Vehicle Inspectorate testers manuals.

Outcome 6

Obligatory lamps and auxiliaries: side; tail; number plate; head; rear fog; indicators; rear reflectors; instrument lights; brake lights; audible warning device (horn); wiper; screen washer; mirrors.

Optional lamps and auxiliaries: front fog; driving; reversing; rear wipe and wash.

Instruments: speedometer; warning lamps.

Inspection procedures: Vehicle Inspectorate testers manuals.

Outcome 7

Report: formal written report, using proforma (where required).

General information: vehicle/motorcycle identification, registration number; make, model VIN/chassis number; vehicle registered keeper; driver; mileage; date, time and location of inspection; persons present.

Specific information: items inspected; faults identified; possible statutory offences.

Statutory offences: construction and use; Road Traffic Acts; type approval regulations.

Evidence: inspection report notes; measurements taken; photographic evidence (where applicable); specialist witness testimony (where applicable).

General

Outcomes should be initially taught in a classroom environment regularly supported by workshop facilities with access to a range of vehicles and motorcycles.

Copies of the Vehicle Inspectorate testers manuals for light vehicles, motorcycles, goods vehicles and passenger carrying vehicles must be available for reference by candidates as required.

The necessary equipment must be provided, in a safe condition and ready for use by the students.

The methods and techniques of inspection and the standards applied, must be in accordance with the information given in the Vehicle Inspectorate testers manual for the type of vehicle being examined.

The emphasis must be on the identification of faults which present a hazard to road users, and the accurate interpretation of the results of the inspection of passenger cars and light goods vehicles, relative to the appropriate section(s) of the law.

APPROACHES TO GENERATING EVIDENCE Tutors should demonstrate the practical elements step-by-step and introduce the underpinning knowledge at the most appropriate stages of the programme. Safety and the use of safe working practices must be emphasised throughout the instruction and assessment.

ASSESSMENT PROCEDURES Centres may use the Instruments of Assessment which are considered by tutors/trainers to be most appropriate. Examples of Instruments of Assessment which could be used are as follows:

Outcomes 1-6

Performance evidence required for these outcomes could be generated from one or more integrated vehicle examinations conducted towards the end of the course of instruction or conducted separately as the course progresses.

Assessments of underpinning knowledge to supplement that assessed by a demonstration of competent performance, could be carried out by written test or oral questioning.

Outcome 7

Performance evidence should be provided by the completion of a written report of a vehicle and motorcycle inspection, carried out by the candidate.

Knowledge evidence should be supplemented by written or oral responses to a written examination paper(s) covering the candidate's understanding of the technical aspects of vehicle and motorcycle construction and examination.

RECOGNITION Many SQA NC units are recognised for entry/recruitment purposes. For up-to-date information see the SQA guide 'Recognised Groupings of National Certificate Modules'.

REFERENCES

1. Guide to unit writing. (A018).
2. For a fuller discussion on assessment issues, please refer to SQA's Guide to Assessment. (B005).
3. Procedures for special needs statements are set out in SQA's guide 'Candidates with Special Needs'. (B006).
4. Information for centres on SQA's operating procedures is contained in SQA's Guide to Procedures. (F009).
5. For details of other SQA publications, please consult SQA's publications list. (X037).