-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION

GENERAL INFORMATION

-Module Number- **2210044** **-Session-1994-95**

-Superclass- **ZJ**

-Title- **MOTOR VEHICLE INSPECTION: HEAVY GOODS AND PASSENGER-CARRYING VEHICLES**

-DESCRIPTION-

GENERAL COMPETENCE FOR UNIT: Carrying out inspections of heavy goods vehicles and passenger-carrying vehicles, identifying, evaluating and recording defects.

OUTCOMES

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

CREDIT VALUE: 1 NC Credit

ACCESS STATEMENT: Candidates should have basic understanding of heavy goods vehicle and passenger-carrying vehicle constructions and systems, with particular understanding of heavy vehicle and trailer, air-braking 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).

NATIONAL CERTIFICATE MODULE: UNIT SPECIFICATION

STATEMENT OF STANDARDS

UNIT NUMBER: 2210044

UNIT TITLE: MOTOR VEHICLE INSPECTION: HEAVY GOODS AND PASSENGER-CARRYING VEHICLES

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 OF A LARGE VEHICLE

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 vehicle to be inspected.
(d) Vehicle identification information is recorded accurately and completely.

RANGE STATEMENT

Vehicles: heavy goods vehicles and passenger-carrying vehicles in a normal used state.

Equipment: lifting; levers; lamps; crawlers; support information; report/note sheets.

Support information: checklists; Vehicle Inspectorate Inspection Manuals.

Vehicle identification information: make; model; registration mark; mileage, VIN or chassis number; type of vehicle; licensed operator.

EVIDENCE REQUIREMENTS

Performance evidence:

Presentation of a large vehicle, inspection equipment and support material ready to carry out a full inspection.

Written report containing the information pertaining to Performance Criterion (d).

Knowledge evidence:

Written and/or oral evidence of the candidate's knowledge of: importance of accuracy of the information recorded; hazards associated with carrying out large vehicle inspections.

OUTCOME

2. IDENTIFY VEHICLE TYPES AND FAULTS RELATED TO THE VEHICLE FRAME AND BODYWORK

PERFORMANCE CRITERIA

(a) Type of vehicle is identified correctly.
(b) Load-bearing areas are identified correctly.
(c) Methods of inspection and test are in accordance with relevant procedures.
(d) Inspection and test for corrosion weakening identify all potential hazards.
(e) Inspection and test of body fittings identify all faults and potential hazards.

RANGE STATEMENT

Vehicle types: rigid; articulated; platform; box van; semi-trailer; draw-bar trailer; bulk carrier; abnormal load carrier; passenger-carrying.

Load bearing areas: chassis members; suspension mountings; body mountings; steering mountings; engine/transmission mountings.

Goods vehicle body fittings: seat mountings; door locks and hinges; window safety glass; mudguards.

Passenger carrying vehicle body fittings: drivers seat mountings; doors; steps; gangways; emergency exits; fire extinguishers; first-aid kit; passenger seats; interior lights; driver guard rails.

Relevant procedures: Vehicle Inspectorate Inspection Manuals, Motor Vehicle Defect Guide.

EVIDENCE REQUIREMENTS

Performance evidence:

Written report or checklist correctly identifying:

- the inspections carried out;
- all defects identified.

Knowledge evidence:

Written and/or oral evidence of the candidate's understanding of the underpinning knowledge including:

- construction and operation of large vehicle systems;
- hazards associated with common faults.

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 identifies all faults and potential hazards.
(c) Inspection and test of the exhaust system identify all faults and potential hazards.
(d) Visual inspection of the fuel system identifies all faults and potential hazards.

RANGE STATEMENT

Relevant procedures: Vehicle Inspectorate Inspection Manuals; Motor Vehicle Defect Guide.

Engine faults: excessive oil leakage; excessive 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 task filler cap.

EVIDENCE REQUIREMENTS

Performance evidence:

Written report or checklist correctly identifying:

- the inspections carried out;
- all defects found.

Knowledge evidence:

Written and/or oral evidence of the candidate's understanding of the underpinning knowledge including:

- construction and operation of vehicle systems;
- hazards associated with common faults.

OUTCOME

4. IDENTIFY FAULTS RELATED TO LARGE VEHICLE STEERING, SUSPENSION AND TRANSMISSION

PERFORMANCE CRITERIA

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

RANGE STATEMENT

Relevant procedures: Vehicle Inspectorate Inspection Manuals; Motor Vehicle Defect Guide.

Types of steering: power-assisted; non-assisted; single axle steering; twin axle steering.

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

Types of spring and suspension: leaf; pneumatic springs; self-levelling systems; single; twin and triple axle systems; dampers; anti-roll torsion bars; Panhard rods; tie bars; lifting axles.

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

Transmission system faults: oil leakage; worn universal joints and splines; insecure mountings; defective drive shaft guards.

EVIDENCE REQUIREMENTS

Performance evidence:

Written report or checklist correctly identifying:

- the inspections carried out;
- all defects found.

Knowledge evidence:

Written and/or oral evidence of the candidate's understanding of the underpinning knowledge including:

- construction and operation of large vehicle systems;
- hazards associated with common faults.

OUTCOME

5. IDENTIFY FAULTS RELATED TO LARGE VEHICLE BRAKES, WHEELS AND TYRES

PERFORMANCE CRITERIA

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

RANGE STATEMENT

Relevant procedures: Vehicle Inspectorate Inspection Manuals; Motor Vehicle Defect Guide.

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

Types of brake system: air over hydraulic; air pressure; single line; dual line; spring brakes; trailer brakes.

Brake system faults: excessive pedal movement; excessive lever movement; insecure parking brake ratchet; damaged/seized mechanisms; air in the hydraulic systems; sinking brake pedal; air/fluid leakage; insufficient fluid; worn anti-slip

pedal surface; oil/grease on the brake pads/linings; corroded, insecure or damaged brake pipes.

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.

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; mixed tyre constructions.

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

EVIDENCE REQUIREMENT

Performance evidence:

Written report or checklist correctly identifying:

- the inspections carried out;
- all defects found.

Knowledge evidence:

Written and/or oral evidence of the candidate's understanding of the underpinning knowledge including:

- construction and operation of large vehicle systems;
- hazards associated with common faults.

OUTCOME

6. IDENTIFY FAULTS RELATED TO LARGE VEHICLE LIGHTS, AUXILIARIES AND INSTRUMENTS

PERFORMANCE CRITERIA

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

RANGE STATEMENT

Relevant procedures: Vehicle Inspectorate Inspection Manuals; Motor Vehicle Defect Guide.

Obligatory lamps and auxiliaries: front end outline; rear end outline; rear registration mark; headlamp operation, dip and aim; rear fog; direction indicators; side marker lamps and reflectors; abnormal load lamps and marker boards; hazard warning; rear reflective marker boards; brake lamps; instrument lamps; audible warning device (horn); screen wiper; screen washer; mirrors.

Optional lamps and auxiliaries: front fog; driving; reversing.

Instruments: speedometer; warning lamps.

EVIDENCE REQUIREMENTS

Performance evidence:

Written report or checklist correctly identifying:

- the inspections carried out;
- all defects found.

Written and/or oral evidence of the candidate's understanding of the underpinning knowledge including:

- construction and operation of large vehicle systems;
- hazards associated with common faults.

OUTCOME

7. PRESENT A FORMAL REPORT OF A LARGE VEHICLE INSPECTION

PERFORMANCE CRITERIA

(a) The report is accurate and comprehensive and includes all the defects identified during the vehicle examination.
(b) Statutory offences associated with each defect are correctly stated.
(c) Evidence to support each statutory offence is presented clearly and accurately.

RANGE STATEMENT

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

General information: vehicle identification; registration number; make, type; VIN/Chassis Number; vehicle registered keeper; driver; operator licence holder; mileage; date, time and location of inspection; persons present.

Specific information: items inspected; faults identified.

Statutory offences: Construction and Use Regulations; Road Traffic Acts; Type Approval Regulations.

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

EVIDENCE REQUIREMENTS

Performance evidence:

Two complete reports, including information pertaining to Outcomes 1 to 7, covering inspections of:

(i) a heavy goods vehicle;
(ii) a passenger carrying vehicle.

Knowledge evidence:

Written and/or oral evidence of the candidate's understanding of the underpinning knowledge including:

- reasons for accurate reports;
- sources of information.

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: 2210044

UNIT TITLE: MOTOR VEHICLE INSPECTION: HEAVY GOODS AND PASSENGER-CARRYING VEHICLES

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 inspection of heavy goods vehicles and passenger-carrying vehicles, in order to make decisions regarding the safety of vehicles 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 heavy goods vehicles and passenger-carrying vehicles for defects in order to make decisions regarding the safety of a vehicle and possible contraventions of the law regarding its use on a road. You will learn how to inspect heavy goods vehicles and passenger-carrying vehicles, interpret inspection information, record the results of inspections and identify contraventions of the law regarding the safety and use of vehicles on a road.

CONTENT/CONTEXT Outcomes should be initially taught in a classroom environment regularly supported by workshop facilities with access to a range of heavy vehicles and passenger-carrying vehicles.

Copies of the Vehicle Inspectorate Inspection Manuals for Heavy Goods Vehicles and Passenger-Carrying Vehicles, and the Motor Vehicle Defect Guide 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 candidates.

The methods and techniques of inspection and the standards applied, must be in accordance with the information given in the Vehicle Inspectorate Inspection 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 heavy goods vehicles and passenger-carrying vehicles, relative to the appropriate section(s) of the law.

APPROACHES TO GENERATING EVIDENCE Tutors/trainers 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 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 construction and examination.

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

REFERENCES

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