-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

Hanover House
24 Douglas Street
GLASGOW G2 7NQ

NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number- **2210460** **-Session-1990-91**
-Superclass- **XS**

-Title- **SCHEDULED SERVICING (x 2)**

-DESCRIPTION-

Purpose

This module is designed to develop the knowledge and skills necessary to carry out scheduled servicing requirements on a range of vehicles.
It is aimed at those intending to pursue a career in the motor vehicle repair industry.

The module is also designed to complement RTITB modules LV001A and HV001A Scheduled Servicing and will provide the student with the necessary knowledge and skills to prepare for the RTITB Skills Test. It should be noted however that adequate supporting industrial experience will also be necessary.

Preferred Entry Level

Modules numbered 94370 through 9437 inclusive and module number 2210450.

Learning Outcomes

The student should:

1. determine, using published data, the scheduled servicing requirements, items and materials for a range of vehicles;

2. assess the condition of service related components in, a vehicle using manufacturers' recommended procedures;

3. remove and refit all service related vehicle components and fluids;

4. carry out adjustments on vehicle systems and components in accordance with manufacturers' scheduled servicing instructions;

5. carry out cleaning and lubrication on all

vehicle components in accordance with manufacturers' scheduled servicing instructions.

Assessment Procedures

Acceptable performance in the 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 **DETERMINE, USING PUBLISHED DATA, THE SCHEDULED SERVICING REQUIREMENTS, ITEMS AND MATERIALS FOR A RANGE OF VEHICLES**

PCs The student:

(a) explains in terms of road worthiness and maintenance specification why scheduled servicing is necessary;
(b) states the reasons for using service schedules based on mileage, time, season and usage;
(c) identifies a vehicle by make and model using the vehicle identification number plate;
(d) selects from published data a service schedule appropriate to model and usage;
(e) identifies, from suppliers catalogues and published data, the components and materials necessary to carry out a selected service schedule.

IA Assignment

The student will complete an assignment which tests understanding of the need for scheduled vehicle servicing and demonstrates the ability to use relevant parts catalogues and service data in order to identify materials and components required for a selected scheduled service.

The assignment will be constructed around the task of identifying a suitable schedule service and preparing an accurate list of material and components required to carry out the service on a specified vehicle given the vehicle service history, vehicle information plate, odometer reading, suitable catalogues and published service data. The vehicle should be showing at least 20,000 miles on the odometer and require a major service involving the replacement of lubricants and filters and checking/adjustment of service related components.

Satisfactory achievement of the Outcome will be based on the student carrying out the task in a methodical manner and producing correct results which correspond to relevant manufacturers' specifications.

OUTCOME 2 **ASSESS THE CONDITION OF SERVICE RELATED COMPONENTS IN A VEHICLE USING MANUFACTURERS RECOMMENDED PROCEDURES**

PCs The student:

(a) checks visually and manually that all components are secure;
(b) carries out a visual and manual check of all service components in relation to operation, wear, condition and leaks;
(c) arranges work in a logical sequence to maximise efficiency and accuracy of the service;
(d) records and reports the results and any discrepancies from manual and visual check;
(e) uses tools and equipment appropriate to the task;
(f) follows safe working practices and health and hygiene requirements relevant to the task.

IA Assignment

The student will complete an assignment set under workshop conditions to demonstrate the application of knowledge and skills required to assess the condition of service related components on a vehicle.

The practical assignment will be carried out on a vehicle using an itemised service checklist. The student will work in an efficient and logical manner, using schedule service documents to record and report on component condition. Where applicable Department of Transport vehicle test standards should be employed to assess component serviceability.

Satisfactory achievement of the Outcome will be based on all performance criteria being met. A suitable checklist may be used to record student performance. A sample checklist is shown in Annex 1.

OUTCOME 3 **REMOVE AND REFIT ALL SERVICE RELATED VEHICLE COMPONENTS AND FLUIDS**

PCs The student:

(a) follows procedures as laid down in manufacturers' instructions to remove and replace all service related components;
(b) follows procedures as laid down in manufacturers' instructions to change all service related fluids;
(c) disposes of waste materials and used components in accordance with appropriate legislation and recognised practice;
(d) follows all safe working practices and health and hygiene requirements relevant to the task;
(e) uses tools and equipment appropriate to task.

IA Practical Exercise

The student will complete a practical exercise set under workshop conditions to demonstrate the application of knowledge and skills required to remove and replace all service related vehicle components and fluids, including the disposal of waste materials in accordance with appropriate legislation and recognised practice.

The practical exercise will be carried out on a vehicle using procedures specified in manufacturers' service manuals and observing legislation relevant to disposal of waste materials.

Satisfactory achievement of the Outcome will be based on all performance criteria being met. A suitable checklist may be used to record students performance. A sample checklist is shown in Annex 2.

OUTCOME 4 **CARRY OUT ADJUSTMENTS ON VEHICLE SYSTEMS AND COMPONENTS IN ACCORDANCE WITH MANUFACTURERS' SCHEDULED SERVICING INSTRUCTIONS**

PCs The student:

(a) follows procedures as laid down in vehicle manufacturers' instructions for scheduled

servicing adjustments on vehicle systems and components;
(b) uses tools and equipment appropriate to the task;
(c) follows all safety requirements relevant to the task.

IA Practical Exercise

The student will complete a practical exercise set under workshop conditions to demonstrate the application of knowledge and skills required to carry out scheduled servicing adjustments on vehicle systems and components.

The practical exercise will be carried out on vehicle systems and components using procedures and data specified in published service literature.

Satisfactory achievement of the Outcome will be based on all performance criteria being met. A suitable checklist may be used to record student performance. A sample checklist is shown in Annex 3.

OUTCOME 5 **CARRY OUT CLEANING AND LUBRICATION ON ALL VEHICLE COMPONENTS IN ACCORDANCE WITH MANUFACTURERS' SCHEDULED SERVICING INSTRUCTIONS**

PCs The student:

(a) selects the appropriate materials and methods for cleaning components;
(b) follows the procedures as laid down in manufacturers' instructions for cleaning the components;
(c) selects the appropriate material for lubricating components;
(d) follows the procedures as laid down in manufacturers' instructions for lubricating components;
(e) follows all safe working practices and health and hygiene requirements relevant to the task;
(f) uses appropriate tools and equipment for the task.

IA Practical Exercise

The student will complete a practical exercise set under workshop conditions to demonstrate the application of knowledge and skills required to carry out cleaning and lubrication of vehicle components in accordance with manufacturers' scheduled servicing instructions.

The practical exercise will be carried out on vehicle components using procedures and materials specified in manufacturers' service manuals and observing health, hygiene and safety requirements when using solvent cleaning materials.

Satisfactory achievement of the Outcome will be based on all performance criteria being met. A suitable checklist may be used to record student performance. A sample checklist is shown in Annex 4.

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

CONTENT/CONTEXT

Safety regulations, safe working practices and procedures should be observed at all times.

Corresponding to Outcomes 1-5:

This module should be taught in the context most suited to the students' particular needs. The vehicle selected should suit the vocational area in which the student will be specialising.

OUTCOME 1 Reasons for periodic servicing of vehicle systems as a means of promoting vehicle safety, prolonging operational life and maintaining original specification. Manufacturers' planned servicing schemes incorporating specific maintenance instructions at specified intervals and known as scheduled servicing. The classification of minor, intermediate and major services with the bases used to formulate requirements eg mileage, time, reason, usage.

Systems of vehicle and model identification in current use.

Inspection of published service schedules for a range of vehicles and identification of required parts from manufacturers' catalogues.

Selection of appropriate services and preparation of lists of materials and components from given vehicle details and history.

OUTCOME 2-5 The Annexes to the module provide detailed lists of the content areas to be covered for Outcomes 2-5.

SUGGESTED LEARNING AND TEACHING APPROACHES

This module should be undertaken in a service workshop with an adequate range of running vehicles equipped with the fuel systems and components to be covered. Students should have full access to relevant service publications, special tools and test equipment. The necessary theory should be fitted into practical work where appropriate and the use of visual aids, audio visual materials and text books is highly recommended. Students would be expected to maintain a folio of information from formal and participative directed learning experiences.

THE FOLLOWING SAMPLE CHECKLISTS ARE SUITABLE FOR USE WITH LIGHT VEHICLES. A SIMILAR SAMPLE CHECKLIST MAY BE DEVISED FOR USE WITH THE PARTICULAR CLASS OF VEHICLE SELECTED.

SAMPLE CHECKLIST WHICH COULD BE USED IN ASSESSMENT OF LEARNING OUTCOME 2 ANNEX 1

1. Visually and Manually Checks Security of Components

Exhaust mountings
Exhaust system components
Engine and transmission system mountings
Engine cooling systems
Suspension system mountings, ball-joints and trunnions
Suspension dampers
Steering system mountings, ball-joints and trunnions Braking system pipes, hoses, cylinders and linkages
Transmission system shafts and couplings
Vehicle under-side bodywork including body-sealing
Fuel tank and related pipework
Electrical wiring and components

2. Visually and Manually Checks

2.1 For oil/fluid leaks from:

Engine
Engine cooling system
Suspension dampers
Suspension boots and gaiters
Steering system
Braking system
Hydraulic clutch system
Gearbox for leaks
Automatic transmission
Differential/axle housing

2.2 For serviceability of:

Exhaust mountings
Exhaust system components
Engine and transmission system mountings
Suspension system mountings, ball-joints and trunnions
Braking system pipes, hoses, cylinders, linkages, parking brake, fluid level and pad wear warning indicators
Transmission system shafts and couplings Vehicle under-side body work including body-sealing
Fuel tank and related pipework Electrical wiring and components

2.3 For condition of:

Air cleaner
Rotor arm
Distributor cap
High tension leads

Low tension leads
Vacuum unit pipes and hoses
Radiator, expansion tank and all related hoses
Coolant
Relative density of coolant
Drive belts
Battery case and mountings
Battery leads, terminals and connections
Alternator and drive belts
Tyre tread depth
Road wheels
Lighting systems
Horn
External body work
Windscreen wiper blades and arms
Washer systems

3. Arranges order of work in a logical sequence grouped in three sections:

(i) under vehicle
(ii) vehicle at ground level
(iii) in engine compartment

4. Reports results from visual and manual checks:

(i) detection of all components clearly insecure
(ii) detection of all serious leaks requiring urgent attention
(iii) detection of all items with clear evidence of unserviceability
(iv) accurately assesses component condition

5. Uses tools and equipment correctly

6. Uses vehicle care protection effectively

7. Observes safe working practices

8. Observes statutory regulations

9. Observes health and hygiene precautions associated with the handling of oils and fluids

AMPLE CHECKLIST WHICH COULD BE USED IN ASSESSMENT OF LEARNING OUTCOME 3 ANNEX 2

1. Removes and Refits Service Related Components

1.1 Breather gauzes
Oil filter cartridge or element
Crankcase breather/filter
Air filter element
Air cleaner
Fuel filter element - both for carburettor and petrol injection system
Fuel filter element/cartridge - diesel system, including bleeding the system
Distributor Cap
Contact breaker points

Rotor arms
Spark plugs
Drive belts - alternator - water pump -vacuum pump - power assistance
Road wheels
Disc brake pads
Brake shoes
Automatic transmission fluid filter
Battery
Battery leads
Wiper arms, blades and blade inserts

1.2 Uses car care protection effectively

2. Removes and replaces service related fluids to correct type/quality/level/quantity

2.1 Engine oil

Coolant - including ancillary flushing, preparing anti-freeze mixture and de-aerating cooling system after filling
Power steering oil - including bleeding system
Brake fluid - including bleeding system
Gearbox oil
Automatic transmission fluid
Final drive oil
Windscreen washer fluid

2.2 Cleans component filling area before and after fluid replacement

3. Tops up fluid levels

4. Correctly disposes of:

(i) combustible materials
(ii) health danger related materials
(iii) pollution related materials

5. Maintains a clean working environment

6. Uses the appropriate tools and equipment in the correct manner

7. Observes safe working practices

8. Observes statutory regulations

9. Observes health and hygiene precautions associated with the handling of oils and fluids

SAMPLE CHECKLIST WHICH COULD BE USED IN ASSESSMENT OF LEARNING OUTCOME 4 ANNEX 3

1. Selects correct adjustment data from manufacturers' service manual

2. Follows procedures and carries out scheduled service adjustments to components

Valve clearances
Engine timing belt
Spark plug gaps
Contact breaker points gap
Ignition timing using strobe light
Fuel mixture setting - exhaust emission
Engine idle speed
Drive belt - alternator - water pump - vacuum pump - power assistance
Transmission clutch operating mechanism
Tyre pressures
Drum brakes
Parking brakes
Wheel hub bearings
Road wheel alignment
Door lock striker/catches
Headlamp and auxiliary lamp beam adjustment
Battery condition - recharge - adjust level of electrolyte

3. Set adjustments to within specified tolerances

4. Uses tools and equipment appropriate to the task

5. Uses vehicle care protection effectively

6. Observes safe working practices

7. Observes statutory regulations

SAMPLE CHECKLIST WHICH COULD BE USED IN ASSESSMENT OF LEARNING OUTCOME 5 ANNEX 4

1. Selects the appropriate materials and methods for cleaning components on the basis of personal safety, vehicle safety, effectiveness and economy

1.1 Engine breather gauzes
Oil cooler matrix, engine/automatic transmission
Gauze type air filter
Distributor components
Radiator matrix
Ventilation air ducts and fins
Brake assemblies - including safe collection and disposal of brake dust
Battery terminals
Windscreen washer nozzles

2. Follows laid down procedures for cleaning components

2.1 Masks components against effects of solvents

2.2 Safely contains waste products

2.3 Cleans brake assemblies in accordance with safety requirements of Health and Safety at Work Act

2.4 Disposes of used cleaning materials by correct method

2.5 Uses vehicle care protection effectively

3. Selects appropriate material for lubricating the components

Gauze type air filter
Carburettor control linkages and piston damper
Locks and hinges
Clutch operating mechanism
Gear change linkage
Suspension components
Steering components - including
power assisted steering
Brake assemblies

4. Follows laid down procedures for lubricating components

4.1 Gauze type air filter
Carburettor control linkages and piston damper
Locks and hinges
Clutch operating mechanism
Gear change linkage
Suspension components
Steering components including power assisted steering
Brake assemblies

4.2 Uses correct method of applying lubricant

4.3 Removes excess lubricant

5. Observes safe working practices

6. Observes statutory regulations

7. Observes health and hygiene precautions associated with the handling of solvents, oils and fluids

8. Wears appropriate safety clothing, gloves and eye protection

02/09/98 JH/PB