

# Model Curriculum

## Auto Service Technician Level 5

**SECTOR: AUTOMOTIVE**  
**SUB-SECTOR: AUTOMOTIVE VEHICLE SERVICE**  
**OCCUPATION: TECHNICAL SERVICE & REPAIR**  
**REF. ID: ASC/Q1403, VERSION 1**  
**NSQF LEVEL: 5**



## Certificate

### CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

**AUTOMOTIVE SKILLS DEVELOPMENT COUNCIL**

for the


**MODEL CURRICULUM**

Complying to National Occupational Standards of  
Job Role/ Qualification Pack: **'Auto Service Technician Level 5'** OP No. **'ASC/Q1403 NSQF Level 5'**

Date of Issuance: **8<sup>th</sup> January, 2016**

Valid up to: **7<sup>th</sup> January, 2017\***

\* Valid up to the next review date of the Qualification Pack

  
Authorised Signatory  
(Automotive Skills Development Council)

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# Auto Service Technician

## Level 5

### CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Auto Service Technician Level 5”, in the “Automotive” Sector/Industry and aims at building the following key competencies amongst the learner

<b>Program Name</b>	<b>Auto Service Technician Level5</b>		
<b>Qualification Pack Name &amp; Reference ID.</b>	Auto Service Technician Level 5 ASC/Q1403		
<b>Version No.</b>	1	<b>Version Update Date</b>	12-06 – 2013
<b>Pre-requisites to Training</b>	Preferably Diploma in Mechanical/ Automobile Engineering		
<b>Training Outcomes</b>	<p><b>After completing this programme, participants will be able to:</b></p> <ul style="list-style-type: none"> <li>• identify the fault responsible for vehicle trouble</li> <li>• diagnose operational faults to identify the root cause of the trouble</li> <li>• take necessary action post the root cause analysis to repair the vehicle</li> <li>• carry out servicing and major repairs of a mechanical aggregates in a vehicle</li> <li>• repair and overhaul engine and its related aggregates</li> <li>• repair and overhaul other mechanical aggregates and systems</li> <li>• identify the need for any repairs in the aggregates having any electrical or electronic sub-systems (including electronics within the engines, gear box etc.)</li> <li>• repair electrical and electronic systems fault within the aggregate affecting the overall performance of the vehicle</li> <li>• service any electrical/ electronic part within an aggregate</li> <li>• Plan and organise work requirements including various activities, deliverables or work output required in the given time</li> <li>• Maintain set quality standards</li> <li>• Use resources in a responsible manner(both material / equipment and manpower)</li> <li>• Interact &amp; communicate effectively with colleagues including member in the own group as well as other groups</li> <li>• Monitor the working environment and make sure it meets requirements for health, safety and security.</li> </ul>		

This course encompasses 6 out of 6 National Occupational Standards (NOS) of “Auto Service Technician Level 5” Qualification Pack issued by “SSC: Automotive Skills Development Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1.	<p><b>Introduction</b></p> <p><b>Theory Duration</b> (hh:mm) 08:00</p> <p><b>Practical Duration</b> (hh:mm) 00:00</p> <p><b>Corresponding NOS Code</b> Bridge Module</p>	<ul style="list-style-type: none"> <li>• General Discipline in the class room</li> <li>• General Safety Rules</li> <li>• Introduction to Automotive Industry</li> <li>• Familiarization about various auto manufacturers</li> <li>• Familiarization of terms associated with the sector</li> <li>• Brief outline about the course</li> <li>• Job Opportunities for an Auto Service Technician</li> </ul>	Nil
2.	<p><b>Maintain a healthy, safe and secure working environment</b></p> <p><b>Theory Duration</b> (hh:mm) 10:00</p> <p><b>Practical Duration</b> (hh:mm) 15:00</p> <p><b>Corresponding NOS Code</b> ASC/ N 0003</p>	<ul style="list-style-type: none"> <li>• comply with organisation’s current health, safety and security policies and procedures</li> <li>• report any identified breaches in health, safety, and security policies and procedures to the designated person</li> <li>• Coordinate with other resources at the workplace to achieve the healthy, safe and secure environment for all incorporating all government norms esp. for emergency situations like fires, earthquakes etc.</li> <li>• identify and correct any hazards like illness, accidents, fires or any other natural calamity safely and within the limits of individual’s authority</li> <li>• report any hazards outside the individual’s authority to the relevant person in line with organisational procedures and warn other people who may be affected</li> <li>• follow organisation’s emergency procedures for accidents, fires or any other natural calamity</li> <li>• identify and recommend opportunities for improving health, safety, and security to the designated person</li> <li>• complete all health and safety records are updates and procedures well defined</li> </ul>	<ul style="list-style-type: none"> <li>• Personal Protection Equipment: Gloves, Safety Shoes, goggles, ear plugs, boiler suit</li> <li>• Workshop Safety: Fire extinguishers</li> <li>• First Aid</li> <li>• Safety signs</li> <li>• SOP Charts on safety norms and drills.</li> <li>• Charts of dos and Don’ts in work area.</li> </ul>
3.	<p><b>Assemblies and sub-assemblies in a vehicle and their basic functioning</b></p> <p><b>Theory Duration</b> (hh:mm) 20:00</p>	<ul style="list-style-type: none"> <li>• List and identify various system and parts of a vehicle (diesel, petrol, electrical, gas, hybrid etc.)</li> <li>• Explain the functioning of each system, component and aggregate (including both mechanical and electrical aggregates) of a vehicle.</li> <li>• Dismantle and reassemble aggregates of a vehicle (with help from other technicians and helper)</li> </ul>	<ul style="list-style-type: none"> <li>• Cut sections, Aggregates, Assemblies/ sub-assemblies and working models of a vehicle (diesel, petrol, electrical, gas, hybrid etc.) – <ul style="list-style-type: none"> <li>- Cooling system</li> <li>- air supply systems</li> <li>- emission and exhaust system</li> </ul> </li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Practical Duration</b> (hh:mm) 35:00</p> <p><b>Corresponding NOS Code</b> ASC/ N 1404</p>		<ul style="list-style-type: none"> <li>- ignition systems</li> <li>- clutch assembly</li> <li>- clutch operating system</li> <li>- gearbox (manual and automatic)</li> <li>- drivelines and hubs</li> <li>- drive-train assembly and transmission systems (manual, automatic etc.)</li> <li>- steering system</li> <li>- suspension system</li> <li>- brake system (including regenerative braking systems)</li> <li>- tyres and wheels (including wheel alignment)</li> <li>- radiator</li> <li>- batteries and power storage system</li> <li>- power-generating systems (including charging systems especially for electrical and hybrid vehicles)</li> <li>- electrical wire harness, lighting, ignition, electronic and air-conditioning systems etc.</li> <li>- energy recuperation systems, if applicable (e.g. in electric, gas and hybrid vehicles)</li> <li>- electronic systems including active and passive safety, media, comfort and convenience, supplementary restraint systems (SRS), networking and other systems</li> <li>- electronic control unit</li> <li>- hydraulic and pneumatic system</li> <li>- various lubrication systems</li> <li>- sensors, actuators, relays etc</li> </ul>
4.	<p><b>Introduction to workshop tools and equipment and their usage</b></p>	<ul style="list-style-type: none"> <li>• Identify all tools and equipment in a basic servicing toolkit</li> <li>• Demonstrate the usage of each of the tool and equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Basic Tool Box</li> <li>• Workshop tool/equipment :drain pan, oil can, jack hydraulic, bench vice, two</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Theory Duration</b> (hh:mm) 20:00</p> <p><b>Practical Duration</b> (hh:mm) 30:00</p> <p><b>Corresponding NOS Code</b> ASC/ N 1404</p>	<ul style="list-style-type: none"> <li>Follow standard operating procedures for using workshop tools and equipment</li> <li>Ensure all workshop tools, equipment and workstations are adequately maintained by carrying out scheduled checks, calibration and timely repairs where necessary</li> <li>Ensure any malfunctions observed in tools and equipment are reported to the concerned persons</li> </ul>	<p>post lift/ ramp, pneumatic tool, air compressor, special maintenance tools, bins/ racks, trolley, equipment stands, Wheel aligner, Head light aligner, tyre changer, wheel balancer etc.</p> <ul style="list-style-type: none"> <li>Tools: pressure indicators: feeler gauges, multi-metre, flow metre, temp gauge, dial gauge, tyre pressure indicator etc.</li> <li>Electrical and electronic testing equipment: volt meters, ammeters, ohmmeters, battery testing equipment, computer based diagnostic equipment, neon timing light, oscilloscopes etc</li> <li>Pullers: ball joint separators, bearing pullers, gear puller tools, slide hammers etc.</li> <li>Specialty wrenches: alignment wrenches, chain wrenches, locking wrenches, lug wrenches etc.</li> <li>Measuring equipment: vernier callipers, micrometre, feeler gauges, steel ruler etc</li> <li>Trim or moulding tools: carbon scrapers, gasket scrapers, scrapers, spoons etc.</li> <li>Other tools: hand tools, power tools, lifting and jacking equipment, tensioning equipment, brake roller tester, chassis dynamometer, suspension activation, security activator etc</li> </ul>
5.	<p><b>Carry out diagnosis of vehicle for repair requirements</b></p> <p><b>Theory Duration</b> (hh:mm) 50:00</p> <p><b>Practical Duration</b> (hh:mm) 60:00</p>	<ul style="list-style-type: none"> <li>Understand the auto component manufacturer specifications related to the various components/ aggregates in the vehicle</li> <li>Follow standard operating procedures for using workshop tools and equipment for fault diagnosis or troubleshoot problem in a vehicle</li> <li>Obtain sufficient information from customer/ service advisor to make an assessment of service and repair needs of the vehicle</li> <li>Review the job card and understand customer complaints</li> <li>Follow standard operating procedure set out</li> </ul>	<ul style="list-style-type: none"> <li>Basic Tool Box</li> <li>Workshop tool/equipment :drain pan, oil can, jack hydraulic, bench vice, two post lift/ ramp, pneumatic tool, air compressor, special maintenance tools, bins/ racks, trolley, equipment stands, Wheel aligner, Head light aligner, tyre changer, wheel balancer etc.</li> <li>Diesel/ petrol serviceable training Vehicle</li> <li>Tools: pressure indicators:</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Corresponding NOS Code</b> ASC/ N 1404</p>	<p>for diagnosing faults (in case of complex faults take the assistance of the senior diagnosis technician/ technical manager)</p> <ul style="list-style-type: none"> <li>• Use checklists and standard OEM operating procedures to understand if the fault is because of improper servicing, or low levels of oils, coolants, grease etc. or poor quality oil/ air filter set.</li> <li>• Conduct inspection of the engine and aggregates to diagnose need for repairs or adjustment in various engine aggregates</li> <li>• Conduct inspection of mechanical, electrical and electronic systems to diagnose need for repairs, adjustment or part replacement</li> <li>• Conduct routine and non-routine inspections for pre-purchase assessment, vehicle fitness assessment, emission testing, safety assessment, post-accident diagnostic assessment, post-repair serviceability assessment and manufacturer recall assessment</li> <li>• Compare results of diagnostic inspections and tests against vehicle specifications and any regulatory requirements</li> <li>• Finalise the list all the service, repair and replacement requirements of the vehicle post the diagnosis in consultation with service advisor/ supervisor</li> <li>• Understand the various precautions to be taken to avoid damage to the vehicle and its components while working on diagnosis or troubleshooting the vehicle for any faults</li> <li>• Request assistance from a superior when required(esp. in cases where the complex diagnosis needs to be done and is out of scope)</li> <li>• Assist junior technicians in their work</li> <li>• Ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes)</li> <li>• Drive a relevant 2/3/4 wheeler vehicle which is an important part of the diagnosis of the type of vehicle that is dealt by the relevant OEM</li> </ul>	<p>feeler gauges, multi-metre, flow metre, temp gauge, dial gauge, tyre pressure indicator etc.</p> <ul style="list-style-type: none"> <li>• electrical and electronic testing equipment: volt meters, ammeters, ohmmeters, battery testing equipment, computer based diagnostic equipment, neon timing light, oscilloscopes etc</li> <li>• pullers: ball joint separators, bearing pullers, gear puller tools, slide hammers etc.</li> <li>• Specialty wrenches: alignment wrenches, chain wrenches, locking wrenches, lug wrenches etc.</li> <li>• measuring equipment: vernier callipers, micrometre, feeler gauges, steel ruler etc</li> <li>• organic light emitting displays — anti-lock braking system abs/air bag scan tools, automotive scanners, graphing scanners, modular diagnostic information systems</li> <li>• Personal Protection Equipment: Gloves, Safety Shoes, goggles, ear plugs, boiler suit</li> <li>• Workshop Safety: Fire extinguishers</li> <li>• First Aid</li> <li>• Consumable: cotton waste, petrol/diesel, coolant, lubricant, grease, storage containers, air filters, oil filters, spark plugs, glow plugs etc</li> <li>• Vehicle service manuals, vehicle hand book, job orders, work order, completion material requests, feedback forms, Technical reference books.</li> <li>• Teaching Aids: Charts, CBTs, Videos.</li> <li>• Laptops</li> </ul>
6.	<p><b>Carry out service and major repairs in mechanical aggregates and</b></p>	<ul style="list-style-type: none"> <li>• Understand the auto component manufacturer specifications related to the various components/ aggregates in the vehicle (including major aggregates like</li> </ul>	<ul style="list-style-type: none"> <li>• Basic Tool Box</li> <li>• Workshop tool/equipment: drain pan, oil can, jack hydraulic, bench vice, two</li> </ul>



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>overhauling of a vehicle</b></p> <p><b>Theory Duration</b> (hh:mm) 30:00</p> <p><b>Practical Duration</b> (hh:mm) 50:00</p> <p><b>Corresponding NOS Code</b> ASC/ N 1405</p>	<p>engine. gear box, transmission systems like propeller shaft etc.)</p> <ul style="list-style-type: none"> <li>• Follow standard operating procedures for using workshop tools and equipment for service and repairs of various vehicle aggregates</li> <li>• Review the job card and understand service and repair work to be carried out in the various aggregates( including overall of various aggregates like engine)</li> <li>• Ensure that the correct spare parts, lubricants, tools and other materials required have been obtained</li> <li>• Service, repair and overhaul: <ul style="list-style-type: none"> <li>- Engines and fuel system (diesel, petrol, electrical, CNG, LPG etc.)</li> <li>- cooling system</li> <li>- radiator</li> <li>- emission and exhaust system</li> <li>- brake system</li> <li>- clutch assembly</li> <li>- gearbox, drive-train assembly and transmission systems (manual, automatic etc.)</li> <li>- steering system</li> <li>- suspension system</li> <li>- tyres and wheels</li> <li>- hydraulic and pneumatic system</li> <li>- various lubrication systems</li> </ul> </li> <li>• Conduct routine and non-routine inspections for vehicle fitness assessment, emission testing, safety assessment and post-repair serviceability assessment</li> <li>• Dismantle, assess, repair, clean, replace, adjust and reassemble the vehicle mechanical aggregates/ components</li> <li>• Identify and change vehicle components requiring change due to continuous wear and tear(including oil and air filters in the engine aggregate)</li> <li>• Ensure all dismantled components and aggregates are cleaned and conditioned prior to reassembly</li> <li>• Carry out service, repair and overhauling activities safely to ensure: <ul style="list-style-type: none"> <li>- no damage to the vehicle or other vehicles</li> <li>- no damage to vehicle components and systems</li> <li>- no contact with hazardous materials</li> </ul> </li> <li>• Ensure disposal of materials (including waste oil, scrap of failed parts/ aggregates)in</li> </ul>	<p>post lift/ ramp, pneumatic tool, air compressor, special maintenance tools, bins/ racks, trolley, equipment stands, drums for storage of waste oil, Wheel aligner, Head light aligner, tyre changer, wheel balancer etc.</p> <ul style="list-style-type: none"> <li>• Diesel/ petrol / CNG / LPG / Hybrid training Vehicle</li> <li>• Tools: pressure indicators:multi-metre, flow metre, temp gauge, dial gauge, tyre pressure indicator etc.</li> <li>• Trim or moulding tools: carbon scrapers, gasket scrapers, scrapers, spoons etc.</li> <li>• other tools: hand tools, power tools, lifting and jacking equipment, tensioning equipment, brake roller tester, chassis dynamometer, suspension activation, security activator etc</li> <li>• pullers: ball joint separators, bearing pullers, gear puller tools, slide hammers etc.</li> <li>• Specialty wrenches: alignment wrenches, chain wrenches, locking wrenches, lug wrenches etc.</li> <li>• measuring equipment: vernier callipers, micrometre, feeler gauges, steel ruler, measuring tape etc</li> <li>• Personal Protection Equipment: Gloves, Safety Shoes, goggles, ear plugs, boiler suit</li> <li>• Workshop Safety: Fire extinguishers</li> <li>• First Aid</li> <li>• Consumable: cotton waste, petro;/diesel, coolant, lubricant, grease, storage containers, air filters, oil filters, spark plugs, glow plugs etc</li> <li>• Samples: seals, sealants, fittings, gaskets, joints, fasteners, etc</li> <li>• worn out/ defective/ spurious</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>accordance with the organisation's policies</p> <ul style="list-style-type: none"> <li>• Ensure, in consultation with the service advisor, approval of the customer on all repairs carried out</li> <li>• Record all service and repairs carried out and ensure completeness of tasks assigned before releasing vehicle for the next procedure</li> <li>• Ensure any other repair requirements observed in the other components/ aggregates systems (like engine, gear box etc.) while repairing/ overhauling of braking systems are communicated to service advisor</li> <li>• Follow standard operating procedures for using workshop tools and equipment</li> <li>• Ensure all workshop tools, equipment and workstations are adequately maintained by carrying out scheduled checks, calibration and timely repairs where necessary</li> <li>• Ensure any malfunctions observed in tools and equipment are reported to the concerned persons</li> <li>• Inform the relevant persons where repairs/ overhauling of the aggregates are economically or technically infeasible</li> <li>• Request assistance from a senior technician when required</li> <li>• Assist junior technicians in their work</li> <li>• Ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes)</li> </ul>	<p>samples: seal, gaskets, clutch plate, brake shoes, brake pads, spark plug, oil filter, air cleaner etc.</p> <ul style="list-style-type: none"> <li>• Vehicle service manuals, vehicle hand book, job orders, work order, completion material requests, feedback forms, Technical reference books.</li> <li>• Teaching Aids: Charts, CBTs, Videos.</li> </ul>
7.	<p><b>Carry out service and repairs of electrical and electronic faults in a vehicle</b></p> <p><b>Theory Duration</b> (hh:mm) 50:00</p> <p><b>Practical Duration</b> (hh:mm) 70:00</p> <p><b>Corresponding NOS Code</b> ASC/N 1406</p>	<ul style="list-style-type: none"> <li>• Understand the auto component manufacturer specifications related to the various electrical and electronic components and allied aggregates</li> <li>• Follow standard operating procedures for using workshop tools and equipment for repair of electrical/ electronic components in a vehicle</li> <li>• Review the job card and understand work to be carried out in the electrical/ electronic aggregates as indicated by the supervisor or service advisor</li> <li>• Ensure that the correct spare parts tools and other materials required for service and repair of the electrical/ electronic components have been obtained</li> <li>• Repair and overhaul: <ul style="list-style-type: none"> <li>- stability/steering/ suspension systems</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Basic Tool Box</li> <li>• Workshop tool/equipment: drain pan, oil can, jack hydraulic, bench vice, two post lift/ ramp, pneumatic tool, air compressor, special maintenance tools, bins/ racks, trolley, equipment stands, drums for storage of waste oil, Wheel aligner, Head light aligner, tyre changer, wheel balancer etc.</li> <li>• Diesel/ petrol training Vehicle <ul style="list-style-type: none"> <li>- Aggregate cooling system</li> <li>- air supply systems</li> <li>- emission and exhaust system</li> <li>- ignition systems</li> </ul> </li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>(including electronic stability systems, vehicle dynamic control, closed loop electronic steering and multi-class Bus systems)</p> <ul style="list-style-type: none"> <li>- electric over hydraulic systems (including garbage compactors, crane rams, steering control, excavator bucket control, steering rudder control etc.)</li> <li>- engine management systems (including fuel cell technology/hydrogen, on line maintenance and remote diagnostics, common rail diesel direct injection, drive by wire, multi-class Bus systems and closed loop diesel engine management systems)</li> <li>- transmission/driveline systems (including clutches, torque converters, mechanical and automatic transmissions, drive and power take-off shafts and differentials, mechatronic modules and multi-class Bus systems)</li> <li>- braking systems (including ABS, engine brakes, electric retarders, electric trailer brakes, brake by wire and multi-class Bus systems)</li> <li>- safety systems (including fire suppressing, work load detecting, tyre pressure control, speed/load limiting, traction control, seat belt pre-tensioning, roll over protection, object detection, navigation aids, intelligent transport systems, intelligent SRS systems, adaptive cruise control, multi-class Bus systems, active and passive collision avoidance, infrared vision, lighting and windscreen wipers control)</li> <li>- monitoring/protection systems (including display types such as LCD, VFD, CRT, HUD, re-configurable systems, electronic analogue display, on board diagnostics, remote/wireless monitoring systems and multi-class Bus systems)</li> <li>- convenience and entertainment systems (including audio and visual units, compact disks, analogue tapes, radio, speaker types, amplifiers, crossovers, balancers, aerials and multi-class Bus systems)</li> <li>- theft deterrent systems (including remote keyless entry (RKE), immobiliser system</li> </ul>	<ul style="list-style-type: none"> <li>- clutch assembly</li> <li>- clutch operating system</li> <li>- gearbox (manual and automatic)</li> <li>- drivelines and hubs</li> <li>- drive-train assembly and transmission systems (manual, automatic etc.)</li> <li>- steering system</li> <li>- suspension system</li> <li>- brake system (including regenerative braking systems)</li> <li>- tyres and wheels (including wheel alignment)</li> <li>- radiator</li> <li>- batteries and power storage system</li> <li>- power-generating systems (including charging systems especially for electrical and hybrid vehicles)</li> <li>- electrical wire harness, lighting, ignition, electronic and air-conditioning systems etc.</li> <li>- energy recuperation systems, if applicable (e.g. in electric, gas and hybrid vehicles)</li> <li>- electronic systems including active and passive safety, media, comfort and convenience, supplementary restraint systems (SRS), networking and other systems</li> <li>- electronic control unit</li> <li>- hydraulic and pneumatic system</li> <li>- various lubrication systems</li> <li>- sensors, actuators, relays etc</li> </ul> <ul style="list-style-type: none"> <li>• Tools: pressure indicators: multi-metre, flow metre, temp gauge, dial gauge, tyre pressure indicator etc.</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>design, passive entry systems, two way RKE, fingerprint technologies, rolling codes, transmitter and receiver operation, satellite systems)</p> <ul style="list-style-type: none"> <li>- electric and hybrid vehicle systems (including battery technology, motor drive systems, motor controllers, air conditioning systems, electronic protection systems and multi-class Bus systems)</li> <li>- climate control systems (including air conditioning, heating, blending systems and multi-class Bus systems)</li> <li>- gearbox, drive-train assembly and transmission systems (manual, automatic etc.)</li> <li>- electrical wire harness, lighting, ignition, electronic and air-conditioning systems etc.</li> <li>- electronic active and passive safety, media, comfort and convenience, supplementary restraint systems (SRS), networking and other systems</li> <li>- electronic control unit</li> <li>- hydraulic and pneumatic system</li> <li>• Repair all electrical and electronic faults including direct faults in:               <ul style="list-style-type: none"> <li>- input sensors</li> <li>- output actuators</li> <li>- wiring harnesses</li> <li>- computer systems</li> <li>- calibration/adjustment specifications</li> <li>- component specifications</li> <li>- component assembly</li> <li>- component damage</li> <li>- system modifications</li> </ul> </li> <li>• Repair indirect faults caused on the major mechanical or other aggregates by the influence of electrical and electronic aggregate (e.g. influence of improper working on the ECU might have damaged the charging of the alternator)</li> <li>• Remove, refit and test electrical components for normal operation following major/ minor body repair activities</li> <li>• Dismantle, assess, repair, clean, replace, adjust and reassemble vehicle electric and electronic units</li> <li>• Ensure all dismantled components (other than the electrical or electronic components)</li> </ul>	<ul style="list-style-type: none"> <li>• Trim or moulding tools: carbon scrapers, gasket scrapers, scrapers, spoons etc.</li> <li>• other tools: hand tools, power tools, lifting and jacking equipment, tensioning equipment, brake roller tester, chassis dynamometer, suspension activation, security activator etc</li> <li>• pullers: ball joint separators, bearing pullers, gear puller tools, slide hammers etc.</li> <li>• Specialty wrenches: alignment wrenches, chain wrenches, locking wrenches, lug wrenches etc.</li> <li>• measuring equipment: vernier callipers, micrometre, feeler gauges, steel ruler, measuring tape etc</li> <li>• Personal Protection Equipment: Gloves, Safety Shoes, goggles, ear plugs, boiler suit</li> <li>• Workshop Safety: Fire extinguishers</li> <li>• First Aid</li> <li>• Consumable: cotton waste, petro;/diesel, coolant, lubricant, grease, storage containers, air filters, oil filters, spark plugs, glow plugs etc</li> <li>• Samples: seals, sealants, fittings, gaskets, joints, fasteners, etc</li> <li>• worn out/ defective/ spurious samples: seal, gaskets, clutch plate, brake shoes, brake pads, spark plug, oil filter, air cleaner etc.</li> <li>• Vehicle service manuals, vehicle hand book, job orders, work order, completion material requests, feedback forms, Technical reference books. Teaching Aids: Charts, CBTs, Videos.</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>are cleaned and conditioned prior to reassembly</p> <ul style="list-style-type: none"> <li>• Ensure disposal of materials (including scrap of failed parts/ aggregates) in accordance with the organisation's policies</li> <li>• Understand the various precautions to be taken to avoid damage to other components/ aggregates of a vehicle while working on electrical/ electronic aggregates</li> <li>• Record all service and repairs carried out and ensure completeness of tasks assigned before releasing vehicle for the next procedure</li> <li>• Ensure all workshop tools, equipment and workstations are adequately maintained by carrying out scheduled checks, calibration and timely repairs where necessary</li> <li>• Ensure any malfunctions observed in tools and equipment are reported to the concerned persons</li> <li>• Request assistance from a senior technician or aggregate specialist when required</li> <li>• Inform the relevant persons where repairs are economically or technically infeasible.</li> <li>• Ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes)</li> </ul>	
8.	<p><b>Plan and organise work to meet expected outcomes</b></p> <p><b>Theory Duration</b> (hh:mm) 15:00</p> <p><b>Practical Duration</b> (hh:mm) 30:00</p> <p><b>Corresponding NOS Code</b> ASC/ N 0001</p>	<ul style="list-style-type: none"> <li>• Keep immediate work area clean and tidy</li> <li>• Treat confidential information as per the organisation's guidelines</li> <li>• Work in line with organisation's policies and procedures</li> <li>• Work within the limits of job role</li> <li>• Obtain guidance from appropriate people, where necessary</li> <li>• Ensure work meets the agreed requirements</li> <li>• Establish and agree on work requirements with appropriate people</li> <li>• Manage time, materials and cost effectively</li> <li>• Use resources in a responsible manner</li> </ul>	<ul style="list-style-type: none"> <li>• Cleaning equipment and solutions</li> <li>• Case Study - Audio/video</li> <li>• Training charts</li> </ul>
9.	<p><b>Work effectively in a team</b></p> <p><b>Theory Duration</b> (hh:mm) 15:00</p>	<ul style="list-style-type: none"> <li>• Maintain clear communication with colleagues (by all means including face-to-face, telephonic as well as written)</li> <li>• Work with colleagues to integrate work</li> <li>• Pass on information to colleagues in line with organisational requirements both through verbal as well as non-verbal means</li> </ul>	<ul style="list-style-type: none"> <li>• Case Study - Audio/video</li> <li>• Role Play</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Practical Duration</b> (hh:mm) 30:00</p> <p><b>Corresponding NOS Code</b> ASC/ N 0002</p>	<ul style="list-style-type: none"> <li>• Work in ways that show respect for colleagues</li> <li>• Carry out commitments made to colleagues</li> <li>• Let colleagues know in good time if cannot carry out commitments, explaining the reasons</li> <li>• Identify problems in working with colleagues and take the initiative to solve these problems</li> <li>• Follow the organisation's policies and procedures for working with colleagues</li> </ul>	
10.	<p><b>Functional English Language</b></p> <p><b>Theory Duration</b> (hh:mm) 16:00</p> <p><b>Practical Duration</b> (hh:mm) 16:00</p> <p><b>Corresponding NOS Code</b> ASC/ N 1404, ASC/ N 1405, ASC/ N 1406, ASC/N 0001, ASC/ N 0002, ASC/ N 0003</p>	<ul style="list-style-type: none"> <li>• Use elementary level English.</li> <li>• Understand and use proper grammar</li> </ul>	<ul style="list-style-type: none"> <li>• Audio/video on English course</li> <li>• Reference books English</li> <li>• Work books for English</li> </ul>
11.	<p><b>Soft Skills</b></p> <p><b>Theory Duration</b> (hh:mm) 24:00</p> <p><b>Practical Duration</b> (hh:mm) 24:00</p> <p><b>Corresponding NOS Code</b> ASC/ N 1404, ASC/ N 1405, ASC/ N 1406, ASC/ N 0001, ASC/ N 0002, ASC/ N 0003</p>	<ul style="list-style-type: none"> <li>• Deal with colleagues, supervisor, team members and customer with confidence</li> <li>• Demonstrate etiquettes while dealing with team members and customer</li> <li>• Greet team members, supervisor and customer</li> <li>• Demonstrate efficient problem solving skills</li> <li>• Apply balanced judgement to different situations</li> <li>• Analyze Data and Activities</li> </ul>	<ul style="list-style-type: none"> <li>• Case Study - Audio/video</li> <li>• Role play</li> </ul>
12.	<p><b>Basic Computing</b></p> <p><b>Theory Duration</b> (hh:mm) 24:00</p>	<ul style="list-style-type: none"> <li>• Operate a computer and other peripherals</li> <li>• Retrieve, create, modify and delete data using computer</li> <li>• Create documents using MS Office (word, excel)</li> <li>• Send and receive emails</li> </ul>	<ul style="list-style-type: none"> <li>• CBTs on working on computer</li> <li>• Computer system</li> <li>• UPS</li> <li>• Internet connection</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Practical Duration</b> (hh:mm) 24:00</p> <p><b>Corresponding NOS Code</b> ASC/ N 1404, ASC/ N 1405, ASC/ N 1406, ASC/ N 0001</p>	<ul style="list-style-type: none"> <li>Browse Internet to find relevant solutions to problems</li> </ul>	
13.	<p><b>OJT</b></p> <p><b>Theory Duration</b> (hh:mm) 00:00</p> <p><b>Practical Duration</b> (hh:mm) 164:00</p> <p><b>Corresponding NOS Code</b> Bridge Module</p>	<p>Practical training at selected organization/workshop</p>	
	<p><b>Total Duration</b></p> <p><b>Theory Duration</b> <b>282:00</b></p> <p><b>Practical Duration</b> <b>548:00</b></p>	<p><b>Unique Equipment Required:</b></p> <ul style="list-style-type: none"> <li>Basic Tool Box</li> <li>Workshop tool/equipment: drain pan, oil can, jack hydraulic, bench vice, two post lift/ ramp, pneumatic tool, air compressor, special maintenance tools, bins/ racks, trolley, equipment stands, drums for storage of waste oil , Wheel aligner, Head light aligner, tyre changer, wheel balancer etc.</li> <li>Diesel/ petrol training Vehicle <ul style="list-style-type: none"> <li>Aggregate cooling system</li> <li>air supply systems</li> <li>emission and exhaust system</li> <li>ignition systems</li> <li>clutch assembly</li> <li>clutch operating system</li> <li>gearbox (manual and automatic)</li> <li>drivelines and hubs</li> <li>drive-train assembly and transmission systems (manual, automatic etc.)</li> <li>steering system</li> <li>suspension system</li> <li>brake system (including regenerative braking systems)</li> <li>tyres and wheels (including wheel alignment)</li> <li>radiator</li> <li>batteries and power storage system</li> <li>power-generating systems (including charging systems especially for electrical and hybrid vehicles)</li> <li>electrical wire harness, lighting, ignition, electronic and air-conditioning systems etc.</li> <li>energy recuperation systems, if applicable (e.g. in electric, gas and hybrid</li> </ul> </li> </ul>	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>vehicles)</p> <ul style="list-style-type: none"> <li>- electronic systems including active and passive safety, media, comfort and convenience, supplementary restraint systems (SRS), networking and other systems</li> <li>- electronic control unit</li> <li>- hydraulic and pneumatic system</li> <li>- various lubrication systems</li> </ul> <ul style="list-style-type: none"> <li>• sensors, actuators, relays etc</li> <li>Tools: pressure indicators: multi-metre, flow metre, temp gauge, dial gauge, tyre pressure indicator etc.</li> <li>• Trim or moulding tools: carbon scrapers, gasket scrapers, scrapers, spoons etc.</li> <li>• other tools: hand tools, power tools, lifting and jacking equipment, tensioning equipment, brake roller tester, chassis dynamometer, suspension activation, security activator etc</li> <li>• pullers: ball joint separators, bearing pullers, gear puller tools, slide hammers etc.</li> <li>• Specialty wrenches: alignment wrenches, chain wrenches, locking wrenches, lug wrenches etc.</li> <li>• measuring equipment: vernier callipers, micrometre, feeler gauges, steel ruler, measuring tape etc</li> <li>• Personal Protection Equipment: Gloves, Safety Shoes, goggles, ear plugs, boiler suit</li> <li>• Workshop Safety: Fire extinguishers</li> <li>• First Aid</li> <li>• Safety signs</li> <li>• SOP Charts on safety norms and drills</li> <li>• Consumable: cotton waste, petro;/diesel, coolant, lubricant, grease, storage containers, air filters, oil filters, spark plugs, glow plugs etc</li> <li>• Samples: seals, sealants, fittings, gaskets, joints, fasteners, etc</li> <li>• worn out/ defective/ spurious samples: seal, gaskets, clutch plate, brake shoes, brake pads, spark plug, oil filter, air cleaner etc.</li> <li>• Vehicle service manuals, vehicle hand book, job orders, work order, completion material requests, feedback forms, Technical reference books.</li> <li>• Teaching Aids: Charts, CBTs, Videos.</li> <li>• Cleaning equipment and solutions</li> <li>• Case Study - Audio/video</li> <li>• Charts of dos and Don'ts in work area.</li> <li>• Audio/video on English course</li> <li>• Reference books English</li> <li>• Work books for English</li> <li>• CBTs on working on computer</li> <li>• Computer system</li> <li>• UPS</li> <li>• Internet connection</li> </ul>	

**Grand Total Course Duration: 830 Hours 0Minutes\***

**\* These are only notional number of hours. The training must achieve competency outcomes as define by the QP/NOS**

**(This syllabus/ curriculum has been approved by Automotive Skills Development Council (name of relevant Sector Skill Council or NSDC designated authority)**



## Trainer Prerequisites for Job role: “Auto Service Technician Level 5” mapped to Qualification Pack: “ASC/Q1403, Version 1”

Sr. No.	Area	Details
1	<b>Job Description</b>	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “ASC/Q1403, Version 1”.
2	<b>Personal Attributes</b>	<ul style="list-style-type: none"> <li>▪ Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training.</li> <li>▪ Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused.</li> <li>▪ Eager to learn and keep oneself abreast of the latest developments and newer technologies used in the various systems of the vehicle and its aggregates is highly desirable.</li> <li>▪ Should be able to demonstrate the usage of workshop equipment, instruments, special instruments and tools.</li> <li>▪ Should have sharp diagnostic abilities for identifying reasons of problems in vehicles and troubleshoot.</li> <li>▪ Should be hands-on with servicing of vehicles to provide experiential training.</li> </ul>
3	<b>Minimum Educational Qualifications</b>	Engineer/ Diploma/ ITI in mechanical engineering from a recognized institute
4a	<b>Domain Certification</b>	Certified for Job Role: “Senior Trainer Service Technician” mapped to QP: <u>ASC/Q1401, ASC/QQ1402, ASC/Q 1403, ASC/Q 1404, ASC/Q 1408, ASC/Q 1409, ASC/Q 1411, ASC/Q1414, ASC/Q 1415, ASC/Q1416, ASC/Q 1101</u> ”. Minimum accepted score-75%, as per ASDC guidelines.
4b	<b>Platform Certification</b>	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/Q1402”. Minimum accepted score-75%, as per ASDC guidelines.
5	<b>Experience</b>	<ul style="list-style-type: none"> <li>▪ Minimum 10 years of experience in Automotive Service Industry</li> <li>▪ Experience of working on latest technology</li> <li>▪ Minimum of five years of experience as trainer with OEMs</li> <li>▪ Age: Preferably, not over 35-45 years old; ex-service person and retired auto industry trainers may also apply</li> </ul>

## Annexure: Assessment Criteria

<b>Assessment Criteria for Auto Service Technician Level 5</b>	
<b>Job Role</b>	<b>Auto Service Technician Level 5</b>
<b>Qualification Pack</b>	<b>ASC/Q1403, Version 1</b>
<b>Sector Skill Council</b>	<b>Automotive Skills Development Council</b>

<b>Sr. No.</b>	<b>Guidelines for Assessment</b>
1	Assessment to be conducted by ASDC as per competency output defined in the NOS/QP and the assessment criteria provided in the NOS/QP
2	Assessment to be carried out by a third party Assessment Body duly affiliated to the SSC.
3	ASDC assessments will be comprehensive and cover all aspects of acquired knowledge, practical skills and also basic ability to communicate. Accordingly, evaluation process would include: <ol style="list-style-type: none"> <li>Theory/Knowledge test</li> <li>Practical demonstration test</li> <li>Face to Face Viva</li> </ol>
4	Theory/Knowledge assessment will be carried out on line through a link provided for each assessment that generates a random paper from a bank of questions available at the back end. <ul style="list-style-type: none"> <li>- Exception to an online test in favour of Paper Test would be subject to non-availability of requisite broad band and/or hardware.</li> <li>- On line test would be conducted in the presence of an ASDC assessor till web enabled proctoring is deployed.</li> </ul>
5	ASDC assessor would be conducting Practical and Viva as per the criteria provided in the NOS/QP.
6	Cut off criteria for certification (Marks obtained in %):75%

Sr. No.	NOS No.	NOS Name	Total Marks	Marks Allocation: Skills	Marks Allocation: Knowledge
1	ASC/N 1404	Carry out diagnosis of vehicle for routine repairs requirements	160	100	60
2	ASC/N 1405	Carry out service and major repairs in mechanical aggregate and overhauling of a vehicle	170	110	60
3	ASC/N 1406	Carry out service and repairs of electrical and electronic faults in a vehicle	165	110	55
4	ASC/N 0001	Plan & organize work to meet expected outcome	75	50	25
5	ASC/N 0002	Work effectively in a team	70	50	20
6	ASC/N 0003	Maintain a healthy, safe and secure working environment	60	40	20
<b>Total:</b>			<b>700</b>	<b>460</b>	<b>240</b>
<b>Percentage Weight age:</b>				<b>66%</b>	<b>34%</b>
<b>Minimum Pass% to qualify:</b>				<b>75%</b>	<b>75%</b>



## **Automotive Skills Development Council**

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