

# **Curriculum**

**For**

## **Auto-Service Mechanic**

(6 Months)

**Code: VJ90S002**

## Scheme of Studies

### Auto Service Mechanic

<b>Sr #</b>	<b>Modules</b>	<b>Theory Hours</b>	<b>Practical Hours</b>	<b>Total Hours</b>
1	Follow Safety Rules	13	30	43
2	Lubricating Chassis	7	33	40
3	Changing Engine Oil and Filter	7	39	46
4	Servicing Air Filter	7	39	46
5	Servicing Battery	16	60	76
6	Servicing Fuel Filter	13	45	58
7	Lubricating Transmission	19	90	109
8	Servicing Steering System	16	78	94
9	Servicing Brake Fluid System	16	81	97
10	Servicing Radiator	16	66	82
11	Electrical Check Up	18	79	97
12	Perform Communication	12	-	12
<b>TOTAL HOURS</b>		<b>160</b>	<b>640</b>	<b>800</b>

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## **Introduction**

### **Overall objectives of the Course**

The objective of this course is to produce skilled Auto Service Mechanic for the market. The course has been developed keeping in view the market needs as it has been developed after making a competency profile for an Auto Service Mechanic. Major focus of this course is on equipping the trainees with core as well as technical competencies required to perform the job of an Auto Service Mechanic efficiently and effectively. Therefore the course is designed in such a way that it has a major portion that is devoted to practical skills which is aided by some theory to gain maximum benefit from the course.

After completion of this course the trainee will be able to work as a skilled workman in the auto industry. This course can also be helpful for existing workers who wants to improve their technical skills in this field.

### **Competencies Gained after completion of course**

The trainee will be able to gain the following competencies after completion of this course:

- i. Adhere to safety precautions during job.
- ii. Select proper tools for chassis lubrication and learned visual inspection of chassis.
- iii. Indicate proper engine lubricants (oil) and oil filter removal and reinstallation / assembly.
- iv. Service air filter, battery, fuel filter, brake fluid system, steering system and radiator.
- v. Inspection and replacement of transmission lubricants / oil.
- vi. Check Electrical component and diagnose fault.
- vii. Communicate with different stakeholders effectively.

### **Job opportunities available immediately**

Pass out may be employed in following sectors:

- i. Service Workshop.
- ii. Assembly plants.
- iii. Self Employed Business.

## **Requirement for Training**

### **Entry level**

Minimum qualification of the trainee should be Matric from any group or any grade.

### **Class size**

20~25 students

### **Grading**

Theory	20%	Pass Marks	40%
Practical	80%	Pass Marks	60%
		Fail	0 – 59%
		Average	60 – 78%
		Good	79 – 92%
		Excellent	93 – 100%

### **Minimum qualifications of the trainer**

- i. Skilled Mechanic 6 months Auto-Service Mechanic course with 10 years experience.
- ii. 2 years vocational Certificate 5 years experience.
- iii. D.A.E. in Auto minimum 2 years experience.

### **Medium of Instruction**

English / Urdu

## Overview about the program

Modules	Learning Units	Theory Hours	Work Place Hours
<b>Module 1:</b> Follow Safety Rules  <b>Aim:</b> Safety first Behave as good service mechanic Use of tools safely and efficiently	1.1 Safety precautions. 1.2 Deal with work accident and injuries. 1.3 Wear work clothes / Personal Protective Equipment. 1.4 Use of fire Extinguishers.	13	30
<b>Module 2:</b> Lubricating Chassis  <b>Aim:</b> Behave as good service Mechanic Able to use Service tool Safely and efficiently	2.1 Safety precautions. 2.2 Selects proper lubricants and lubricating tools. 2.3 Fills equipment with lubricants. 2.4 Locates greasing points and lubrication points. 2.5 Clean excess grease from vehicle body. 2.6 Clean turns tools and working area.	07	33
<b>Module 3:</b> Changing Engine Oil and Filter  <b>Aim:</b> Perform to change Engine oil and filter Identify Engine Oil Importance of Oil Filter	3.1 Select Service tools. 3.2 Select Engine lubricants. 3.3 Drain Dirty Oil. 3.4 Check contamination in drain engine Oil. 3.5 Replace oil filter. 3.6 Replace Engine Oil. 3.7 Clean Excess oil from Engine and work area. 3.8 Clean tools	07	39
<b>Module 4:</b> Servicing Air Filter  <b>Aim:</b> Learn skill to change air filter.	4.1 Remove Air filter Assembly. 4.2 Dismantle various elements. 4.3 Visual inspection of air filters elements. 4.4 Report the condition of elements and sealing surfaces. 4.5 Replace air filter and refit air filter Assembly.	07	39
<b>Module 5:</b> Servicing Battery	5.1 Remove battery cables. 5.2 Inspect battery clamp.	16	60

<p><b>Aim:</b> Able to Services the Battery.</p>	<p>5.3 Inspect battery terminals. 5.4 Clean battery terminals / grassing. 5.5 Check electrolyte and specific gravity of battery. 5.6 Top up battery with distilled water. 5.7 Charge battery (High / Low) 5.8 Refitting / replace battery and terminals.</p>		
<p><b>Module 6:</b> Servicing Fuel filter</p> <p><b>Aim:</b> Perform service work of fuel filter efficiently.</p>	<p>6.1 Removes fuel filter by the help of proper tools. 6.2 Inspect fuel filter and sealing surface. 6.3 Replace new fuel filter.</p>	13	45
<p><b>Module 7:</b> Lubricating Transmission</p> <p><b>Aim:</b> Service the transmission system of vehicle efficiently.</p>	<p>7.1 Check transmission oil condition. 7.2 Report level of transmission oil. 7.3 Select lubricants. 7.4 Top up or replace transmission oil upto required mark. 7.5 Clean excess oil from transmission and working area. 7.6 Clean and return tools. 7.7 Keep the tools at proper place.</p>	18	90
<p><b>Module 8:</b> Servicing Steering System</p> <p><b>Aim:</b> Diagnosis Service required in steering System.</p>	<p>8.1 Check oil of steering box and report. 8.2 Remove steering box filler plug. 8.3 Top up steering box oil. 8.4 Refit filler plug.</p>	16	78
<p><b>Module 9:</b> Servicing Brake Fluid System</p> <p><b>Aim:</b> Able to service brake system of the vehicle safely.</p>	<p>9.1 Inspect Brake fluid reservoir. 9.2 Locate brake fluid lines. 9.3 Replace contaminated brake fluid. 9.4 Top up Brake fluid reservoir. 9.5 Reassemble Brake fluid reservoir. 9.6 Clean excess fluid.</p>	16	81

<p><b>Module 10:</b> Radiator Servicing</p> <p><b>Aim:</b> Diagnose and repair the defects in radiator</p>	<p>10.1 Water level check. 10.2 Check contamination in water. 10.3 Clean Radiator fins. 10.4 Check hose pipe. 10.5 Top up radiator reservoir. 10.6 Checks cap seal. 10.7 Learns function of radiator. 10.8 Learn construction of radiator material.</p>	16	66
<p><b>Module 11:</b> Electrical Checkup</p> <p><b>Aim:</b> Indicates electrical faults and perform service safely.</p>	<p>11.1 Able to check and service of electrical components as Head lights, wipers, indicators, brake lights and reverse light. 11.2 Able to check fuse, relay, drive belts oil switch and panel light. 11.3 Able to check generator &amp; self starter</p>	18	79
<p><b>Module 12:</b> Perform Communication</p> <p><b>Aim:</b> Able to communicate effectively.</p>	<p>12.1 Listen client complaint with concentration. 12.2 Communicate owner / client. 12.3 Able to discuss problems with his supervisor. 12.4 Able to communicate concerned office or stake holder.</p>	12	--



## Curriculum contents (Teaching and learning Guide)

**Module 1:** Follow Safety Rules.

**Objective of the Module:** Apply safety procedure during practice, learning and concentration on work.

**Duration:** Total: 33 Hour Theory: 13 Hour Practice: 30 Hours

Learning Unit	Learning outcomes	Learning Elements	Duration	Materials / Tools	Learning Place
Deal with work accidents and injuries.	Able to deal with accidents and injuries with an understanding of safety precautions.	<p><b>Knowledge of:</b>            Use of fire extinguishers.            Accident and incident.            Prevention of noise, dust, toxic smoke and suffocation.            Firefighting equipment.</p> <p><b>Able to:</b>            Apply safely precautions.            Control fire.            Locate water point / sand bin.</p>	43 Hrs	Fire extinguisher. Fire fighting equipment. Sand Buckets Water Pipe. PPE	Classroom and Workshop.

**Module 2: Lubricating Chassis**

**Objective of the Module:** To enable the trainee to be able to use the working tools properly apply safety precautions efficiently.

**Duration:** Total: 40 Theory: 7 Hours Practice: 33 Hours

Learning Unit	Learning outcomes	Learning Elements	Duration	Materials / Tools	Learning Place
2.1 Select proper lubricant and tools. Locate lubricating points.	Learn application of lubricants and be able to use tools and equipment. carefully.	Describe lubricants for Chassis.	40 Hrs	Kerosene Oil Grease Lubricants Cotton Waste Lubricating Equipment Tool Kit	Class room/ Workshop
2.2 Clean excess oil.		Describe use of tool properly. State care of tool and filling methods of grease.			
2.3 Clean tools		Explain types and use of grease. Identify location of greasing points.			
2.4 Keep tools tidy and safely		Describe contamination of grease. Explain cleaning procedure of working tool.  Knowledge of House keeping.  Apply Punctuality.			

**Module 3:****Changing Engine Oil and Filter****Objective of the Module:**

To enable the trainee to be able to change engine oil and filter safely, efficiently with proper use of tools.

**Duration:**

Total: 46 Hours Theory: 7 Hours Practice: 39 Hours

<b>Learning Unit</b>	<b>Learning outcomes</b>	<b>Learning Elements</b>	<b>Duration</b>	<b>Materials / Tools</b>	<b>Learning Place</b>
3.1 Select Engine lubricants and tools.	Select Engine Oil.	Describe types of oil used in Engine.	46 Hours	Engine Oil	Class room / Workshop
3.2 Unplug and Drains Dirty Engine Oil.	Remove oil filter.	Explain procedure to change Engine Oil.		Oil filter	
3.3 Open oil filter.	Select oil filter.	Explain functions of oil filter.		Cotton Waste	
3.4 Replace oil filter.	Check leaks.	State method of tightening oil filter.		Drain plug washer	
3.5 Replace Engine Oil.	Use of oil gauge.	Define types of Engine filters.		Oil filter	
3.6 Check for oil leaks and level.		State causes of oil contamination.		Wrench	
3.7 Clean excess oil from engine and work area.		Use of tool safely and apply safety rules.		Tool Kit	
3.8 Clean and return tools.	Use of tools.				

**Module 4: Servicing Air Filter.**

**Objective of the Module:** To enable the trainee to be able to perform maintenance, diagnosis and services of Air Filter properly.

**Duration:** Total: 46 Theory: 7 Hour Practice: 39 Hours

Learning Unit	Learning outcomes	Learning Elements	Duration	Materials / Tools	Learning Place
4.1 Remove Air filter and assembly.	Able to know importance of air filter.	Describe: <ul style="list-style-type: none"> <li>▪ Importance of clean air for engine ignition.</li> <li>▪ Function of air filter.</li> <li>▪ Sealing surfaces.</li> <li>▪ Filter elements and its types.</li> <li>▪ Replace contaminated air filter.</li> <li>▪ Re-fit the filter assembly.</li> </ul>	46 Hrs	Air filter	Class room / Workshop
4.2 Inspect and report the condition of element / sealing surface.	Able to dismantle air filter assembly.			Seals	
4.3 Clean air filter and air filter housing.	Able to understand the function of air filter.			Cotton waste	
4.4 Refit / replace filter assembly.	Able to replace air filter.			Tool kit	

**Module 5: Servicing Battery.**

**Objective of the Module:** To enable the trainee to be able to perform maintenance, diagnosis and servicing battery properly.

**Duration:** Total: 76 Theory: 16 Hour Practice: 60 Hours

Learning Unit	Learning outcomes	Learning Elements	Duration	Materials / Tools	Learning Place
5.1 Remove battery cables.	Able to adopt safety measures personally.	<ul style="list-style-type: none"> <li>▪ Trace out battery faults.</li> <li>▪ Function of battery in vehicle.</li> </ul>	76 Hrs	Tool kit	Class room / Workshop
5.2 Inspect battery clamp.	Able to inspect battery clamps, cables and terminals	<ul style="list-style-type: none"> <li>▪ Use of Hydrometer.</li> <li>▪ Check battery terminals.</li> </ul>		Battery clamp	
5.3 Clean battery terminals.		<ul style="list-style-type: none"> <li>▪ Charge Battery.</li> </ul>		Battery terminals	
5.4 Check Electrolyte and its specific gravity.	Able to check level of distilled water.	<ul style="list-style-type: none"> <li>▪ Know polarity of battery.</li> <li>▪ Importance of battery cables.</li> </ul>		Charger	
5.5 Top up distilled water.	Able to understand function of battery.	<ul style="list-style-type: none"> <li>▪ Test battery voltage.</li> </ul>		Distilled water	
5.6 Battery Charging.		<ul style="list-style-type: none"> <li>▪ Top up distilled water.</li> </ul>		Hydrometer	
5.7 Refit battery clamp and cables.				Ball Peen Hammer	
			Rubber hammer		

**Module 6: Servicing Fuel Filter.**

**Objective of the Module:** To enable the trainee to be able to perform service of fuel filter, maintenance and diagnosis properly.

**Duration:** Total: 58 Hours Theory: 13 Hour Practice: 45 Hours

Learning Unit	Learning outcomes	Learning Elements	Duration	Materials / Tools required	Learning Place
6.1 Remove fuel pump and filter.	Able to identify service and repair the fuel pump and sealing surface.	Describe:	58 Hours	Tool kit	Classroom and Workshop
6.2 Inspects fuel pump and filter / sealing surface		Purpose of a fuel system.		Fuel pressure gauge	
6.3 Clean fuel pump and filter	Able to replace fuel filter.	Purpose of fuel filter.		Torque Wrench.	
6.4 Refit fuel pump and filter.	Able to refit fuel pump and filter	Construction, function and operation of fuel system.		Fuel Pump	
		Importance of fuel filter.		Fuel Filter	
		Cleaning fuel pump and filter.		Kerosene Oil	
		Replace of fuel filter		Cotton Waste	

**Module 7: Lubricating Transmission**

**Objective of the Module:** To enable the trainee to be able to perform inspection and replacement of transmission lubricant / oil.

**Duration:** Total: 109 Hours Theory: 19 Hours Practice: 90 Hours

Learning Unit	Learning outcomes	Learning Elements	Duration	Materials Tools	Learning Place
7.1 Check and report the condition of Transmission oil and level.	Learner will be able to explain the working of Transmission system.	Describe the functions of Transmission mechanism.  Types of oil used in transmission.	109 Hrs	Transmissi on Oil  Cotton Waste	Class room/ Workshop
7.2 Select lubricants to top up or replaces transmission oil as required.	Identify Transmission oil.  Dismantle, check and assemble transmission component.	Define Gear Ratio.  Types of transmission used (Manual or Automatic).  Safety rules used during work.		Tool kit	
7.3 Clean of working area.					

**Module 8: Servicing Steering System.**

**Objective of the Module:** To enable the trainee to be able to perform Maintenance, diagnosis and services of Steering System.

**Duration:** Total: 94 Hours Theory: 16 Hour Practice: 78 Hours

Learning Unit	Learning outcomes	Learning Elements	Duration	Materials / Tools	Learning Place
8.1 Remove steering box filler plug.	Able to identify steering box Mechanism.	Describe. <ul style="list-style-type: none"> <li>▪ Purpose and function of steering system (Mechanical and power).</li> </ul>	94 Hrs	Mechanical toolkit	Classroom / Workshop
8.2 Check oil in steering box and report,	Able to inspect the power steering belt.	<ul style="list-style-type: none"> <li>▪ Steering Linkages.</li> <li>▪ Service steering power drive belt.</li> </ul>		Jacks	
8.3 Top up steering box oil.	Able to perform services of steering system.	<ul style="list-style-type: none"> <li>▪ Adjust angle and steering wheel.</li> </ul>		Safety stand	
8.4 Refit plug.					



**Module 9: Servicing Brake fluid system.**

**Objective of the Module:** Perform maintenance, diagnosis and Service brake fluid system.

**Duration:** Total: 97 Hours Theory: 16 Hour Practice: 81 Hours

Learning Unit	Learning outcomes	Learning Elements	Duration	Materials / Tools	Learning Place
9.1 Inspect brake fluid reservoir, brake lines and detect fault in brake system.	Able to check brake fluid lines leakage.  Function and purpose of brake fluid reservoir.	Describe:  Purpose of brake fluid mechanism and qualities of brake fluids.  Bleeding of brake system.  Reasons of contamination of brake fluid.	97 Hrs	Tool kit  Brake fluid.  Bleeding pipe,  Transparent container	Classroom / Workshop.
9.2 Clean excess fluid.	Check free play in brake paddle.  Bleeding brake system.  Replace contaminated brake fluid.  Re-assemble of brake system.	The mechanism of master cylinder.  Gauge / level of brake fluids.		Kerosene Oil  Cleaning Brushes  Cotton Waste	

**Module 10:** Servicing Radiator

**Objective of the Module:** Perform the maintenance work of Radiator efficiently and diagnose Service required.

**Duration:** Total: 82 Hours Theory: 16 Hours Practice: 66 Hours

Learning Unit	Learning outcomes	Learning Elements	Duration	Materials / Tools	Learning Place
Diagnose and Servicing Radiator	<p>Able to detect fault of radiator.</p> <p>Able to clean radiator fins.</p> <p>Able to check hose pipes.</p> <p>Able to top up coolant.</p>	<p>Describe the purpose, construction and working of radiator.</p> <p>Describe the function of radiator cap.</p> <p>Check and test radiator cap.</p> <p>Check &amp; replace hose pipes.</p> <p>Replace water pump.</p> <p>Test Thermostat valve.</p>	82 Hrs	<p>Tool kit</p> <p>Radiator Cap</p> <p>Temperature gauge</p> <p>Hose pipes</p> <p>Hose pipe clamps</p> <p>Coolant Radiator cap tester</p>	<p>Class room</p> <p>/</p> <p>workshop</p>

**Module 11: Electrical Check up**

**Objective of the Module:** Perform Electrical tasks required for an Auto Service Mechanic.

**Duration:** Total: 97 Hours Theory: 18 Hours Practice: 79 Hours

<b>Learning Unit</b>	<b>Learning outcomes</b>	<b>Learning Elements</b>	<b>Duration</b>	<b>Materials Tools</b>	<b>Learning Place</b>
Check up and diagnose of Electrical components	To carry out maintenance of different components of electrical system.	Describe:  Purpose and function of Battery, self starter & Alternator.  Conductor and insulator.  Ampere, volt and resistance.  Explain Series and parallel circuits.  Replace Fuses and Bulbs  Diagnosis Battery, alternator and self starter faults.	97 Hours	Auto wire  Thimble Plier  Multi meter  Hydrometer  Distilled Water  Insulation Taps  Lamp Tester  Tool kit  Electrical Board	Classroom Auto Electrician Shop/ workshop

**Module 12: Perform Communication**

**Objective of the Module:** Behave as a good auto service technician.

**Duration:** Total: 12 Hours Theory: 12 Hour Practice: No Hours

Learning Unit	Learning outcomes	Learning Elements	Duration	Materials / Tools	Learning Place
Communicate effectively with: Clients. Seniors. Juniors. Peers. Supervisors.	Able to explain professionally, service required to a client.  Able to deal peoples.  Able to learn importance of punctuality and commitment.	<ul style="list-style-type: none"> <li>▪ Behave like a gentleman.</li> <li>▪ Behave talk like a professional technician.</li> <li>▪ Improve his knowledge periodically.</li> <li>▪ Improve work concentration.</li> <li>▪ Be laborious, energetic, reliable and patience.</li> </ul>	12 Hours	White Board  Duster  Marker	Classroom

## Assessment Template

### Module 1: Follow Safety Rules

Learning Unit	Theory Hrs	Work place Hrs	Recommended formative assessment	Recommended Methodology	Scheduled Date
1.1 Wear work cloths / Personal Protective Equipment			<ul style="list-style-type: none"> <li>▪ Explain procedure for using Fire Extinguishers.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Questions and Answers.</li> </ul>	
1.2 Deal with work accident and injuries.	2 Hours / Day	2 Hours / Day	<ul style="list-style-type: none"> <li>▪ Differentiate between Accidents and incidents.</li> </ul>	<ul style="list-style-type: none"> <li>▪ MCQ's</li> <li>▪ On job evaluations</li> </ul>	
1.3 Use fire extinguishers			<ul style="list-style-type: none"> <li>▪ Explain Hazards and taking countermeasures.</li> <li>▪ Explain the classification of five extinguishers.</li> <li>▪ Gives awareness to follow safety rules.</li> </ul>		

## Module 2: Lubricate Chassis

Learning Unit	Theory Hrs	Work place Hrs	Recommended formative assessment	Recommended Methodology	Scheduled Date
2.1 Service and Lubricating Chassis	1/Day	4/Day	Explain Lubricants for Chassis. Describe use of tool properly. Identify location of greasing points.	<ul style="list-style-type: none"> <li>▪ Observation.</li> <li>▪ Oral questions.</li> <li>▪ MCQ's paper.</li> </ul>	
2.2 Selects proper lubricants		---	State Selection procedure for lubricants.  Explain cleaning procedure of tool.	<ul style="list-style-type: none"> <li>▪ Observation.</li> <li>▪ Oral questions.</li> <li>▪ MCQ's paper.</li> </ul>	
2.3 Locates lubricants points		---	Explain lubricants location.	<ul style="list-style-type: none"> <li>▪ Observation</li> <li>▪ True and false question paper.</li> </ul>	
2.4 Clean Tools		---			

**Module 3: Change Engine Oil and Filter**

<b>Learning Unit</b>	<b>Theory Hrs</b>	<b>Work place Hrs</b>	<b>Recommended formative assessment</b>	<b>Recommended Methodology</b>	<b>Scheduled Date</b>
3.1 Selects Engine Oil and tools.	1/Day	6/Day	Describe types of oil used in different engines.	<ul style="list-style-type: none"> <li>▪ Oral questions.</li> <li>▪ Checking work.</li> </ul>	
3.2 Drain Dirty oil and open filter.	---	---	<p>Explain function of oil filter.</p> <p>Explain procedure to change engine oil.</p>	<ul style="list-style-type: none"> <li>▪ Checking refitting of filter.</li> <li>▪ MCQs</li> </ul>	
3.3 Replace oil filter.	---	---	Explain cleaning method of used tool.	<ul style="list-style-type: none"> <li>▪ Demonstration.</li> </ul>	
3.4 Replace drain plug washer	---	---	State function of drain plug washer	<ul style="list-style-type: none"> <li>▪ Demonstration.</li> </ul>	
3.5 Replace Engine Oil.	---	---	<p>State causes of oil contamination.</p> <p>State proper use of tool.</p>	<ul style="list-style-type: none"> <li>▪ MCQ's paper.</li> <li>▪ True and False paper.</li> </ul>	
3.6 Cleans and return tools.	---	---			

**Module 4: Service Air Filter**

<b>Learning Unit</b>	<b>Theory Hrs</b>	<b>Work place Hrs</b>	<b>Recommended formative assessment</b>	<b>Recommended Methodology</b>	<b>Scheduled Date</b>
4.1 Removes Air Filter Assembly and Elements.	1/Day	6/Day	<ul style="list-style-type: none"> <li>▪ Explain function of air filter and sealing surface.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Questions and Answers.</li> </ul>	
4.2 Inspect and reports the condition of elements and sealing surface.			<ul style="list-style-type: none"> <li>▪ Enlist filter elements.</li> <li>▪ Enlist tool used during practice.</li> </ul>	<ul style="list-style-type: none"> <li>▪ MCQ's paper.</li> </ul>	
4.3 Replace air filter.			<ul style="list-style-type: none"> <li>▪ State Importance of clean air for engine ignition.</li> </ul>	<ul style="list-style-type: none"> <li>▪ On job evaluation.</li> </ul>	
4.4 Re-fit Air filter Assembly.			<ul style="list-style-type: none"> <li>▪ Explain procedure of replace &amp; refit of Air filter Assembly.</li> </ul>		



**Module 5: Service Battery**

<b>Learning Unit</b>	<b>Theory Hrs</b>	<b>Work place Hrs</b>	<b>Recommended formative assessment</b>	<b>Recommended Methodology</b>	<b>Scheduled Date</b>
5.1 Removes Battery Cable and inspects terminals.	1/Day	6/Day	<ul style="list-style-type: none"> <li>▪ Explain function of Battery.</li> <li>▪ Trace out battery fault.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Questions and Answers.</li> </ul>	
5.2 Clean terminals and check Specific gravity of electrolyte.			<ul style="list-style-type: none"> <li>▪ Explain polarity.</li> <li>▪ Describe (i) Function of Battery. (ii) Battery voltage.</li> </ul>	<ul style="list-style-type: none"> <li>▪ On job Evaluation</li> <li>▪ MCQ's paper</li> </ul>	
5.3 Top up distilled water, charge battery.			<ul style="list-style-type: none"> <li>▪ Describe charging procedure of battery.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Checking procedure.</li> </ul>	
5.4 Re fix Battery.			<ul style="list-style-type: none"> <li>▪ Explain Safety precaution applied during servicing battery.</li> <li>▪ State Re-fitting steps of battery.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Checking the job.</li> <li>▪ On Job Evaluation</li> </ul>	

**Module 6: Service Fuel Filter**

<b>Learning Unit</b>	<b>Theory Hrs</b>	<b>Work place Hrs</b>	<b>Recommended formative assessment</b>	<b>Recommended Methodology</b>	<b>Scheduled Date</b>
6.1 Remove fuel pump and filter.			<ul style="list-style-type: none"> <li>▪ Describe purpose of fuel pump and filter.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Questions and Answers.</li> <li>▪</li> </ul>	
6.2 Inspect fuel pump, fuel filter and sealing surface.	1/Day	6/Day	<ul style="list-style-type: none"> <li>▪ Explain, Function and Operation of Fuel gauges.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continuous checking of job. On job evaluation</li> <li>▪ MCQ's.</li> </ul>	
6.3 Replace fuel filter and fuel pump.			<ul style="list-style-type: none"> <li>▪ Explain procedure of refixing / refitting of fuel pump and fuel filter.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Checking refitting method of fuel pump and filter.</li> </ul>	

**Module 7: Lubricate Transmission**

<b>Learning Unit</b>	<b>Theory Hrs</b>	<b>Work place Hrs</b>	<b>Recommended formative assessment</b>	<b>Recommended Methodology</b>	<b>Scheduled Date</b>
7.1 Check and report the condition of Transmission oil and level.			Explain function of Transmission Mechanism.  State types of oil used in transmission system.	<ul style="list-style-type: none"> <li>▪ Questions and Answers.</li> <li>▪ Oral questions.</li> <li>▪ MCQ's</li> </ul>	
7.2 Select Lubricants.	1/Day	6/Day	Explain gear ratio.	<ul style="list-style-type: none"> <li>▪ On Job Evaluation</li> <li>▪ Demonstration</li> </ul>	
7.3 Replace Transmission Oil.	---	---	Describe safety procedure for replacing transmission.	<ul style="list-style-type: none"> <li>▪ MCQ's paper.</li> </ul>	
7.4 Clean and return tools.					

## Module 8: Service Steering System

Learning Unit	Theory Hrs	Work place Hrs	Recommended formative assessment	Recommended Methodology	Scheduled Date
8.1 Removes steering box reservoir filler plug.			Describe <ul style="list-style-type: none"> <li>▪ Purpose, function and construction of steering box.</li> <li>▪ Mechanical and power.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Questions and Answers.</li> <li>▪ MCQ's paper.</li> </ul>	
8.2 Check oil in steering box.	1/Day	6/Day	Explain Steering linkage.	<ul style="list-style-type: none"> <li>▪ On job evaluation</li> </ul>	
8.3 Top up steering box oil reservoir.			Describe Service of steering box.  Explain adjusting procedure of angle and steering wheel.		
8.4 Refit plug and re-assemble steering box.					

**Module 9: Service Brake Fluid System**

<b>Learning Unit</b>	<b>Theory Hrs</b>	<b>Work place Hrs</b>	<b>Recommended formative assessment</b>	<b>Recommended Methodology</b>	<b>Scheduled Date</b>
9.1 Inspect Brake fluid reservoir and detect fault in system.			<ul style="list-style-type: none"> <li>▪ Describe function and purpose of brake fluid and reservoir.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Questions and Answers.</li> </ul>	
9.2 Top up brake fluid in fluid reservoir  9.3 Clean tools and excess fluid	1/Day	6/Day	<ul style="list-style-type: none"> <li>▪ Explain causes of contamination of brake fluid.</li> <li>▪ State bleeding procedure of brake system.</li> <li>▪ Explain fluid pressure in brake system</li> </ul>	<ul style="list-style-type: none"> <li>▪ On Job Evaluation.</li> <li>▪ MCQ's paper.</li> </ul>	

## Module 10: Service Radiator

Learning Unit	Theory Hrs	Work place Hrs	Recommended formative assessment	Recommended Methodology	Scheduled Date
10.1 Diagnose fault in Radiator.	1/Day	6/Day	<ul style="list-style-type: none"> <li>▪ Describe purpose construction and function of Radiator.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Oral and Written question and answer.</li> </ul>	
10.2 Water Level checkup.			<ul style="list-style-type: none"> <li>▪ Explain function of radiator Cap &amp; Water Pump.</li> </ul>	<ul style="list-style-type: none"> <li>▪ MCQ's paper.</li> </ul>	
10.3 Cleaning Radiator Fins.			<ul style="list-style-type: none"> <li>▪ Explain operation of Thermostat valve.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Written paper.</li> </ul>	
10.4 Check Hose pipes.			<ul style="list-style-type: none"> <li>▪ State purpose of coolant mixture and hose pipes.</li> </ul>	<ul style="list-style-type: none"> <li>▪ On job evaluation</li> </ul>	
10.5 Top up coolant.			<ul style="list-style-type: none"> <li>▪ State cleaning method of radiator fins.</li> </ul>		

## Module 11: Electrical Checkup

Learning Unit	Theory Hrs	Work place Hrs	Recommended formative assessment	Recommended Methodology	Scheduled Date
11.1 Checkup and diagnose electrical component	1/Day	6/Day	<ul style="list-style-type: none"> <li>▪ Describe purpose and function of Battery / Self starter &amp; alternator.</li> <li>▪ Explain conductor and insulator.</li> <li>▪ Explain Ampere, Volt and Resistance.</li> <li>▪ Explain Series and parallel circuits.</li> <li>▪ Diagnose battery fault and replace fuses and bulbs.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Question and Answer.</li> <li>▪ MCQ's paper.</li> <li>▪ On Job Evaluation</li> </ul>	

**Module 12: Perform Communication**

Learning Unit	Theory Hrs	Work place Hrs	Recommended formative assessment	Recommended Methodology	Scheduled Date
Perform Communication with Clients Supervisors. Peers. Seniors. Juniors.	2 Hours / Day	---	<ul style="list-style-type: none"> <li>▪ Describe Behavioural change in the life of auto service Mechanic.</li> <li>▪ Describe work concentration.</li> <li>▪ Habits make character comments on the above phrase.</li> <li>▪ Explain importance of punctuality and responsibility.</li> <li>▪ Communication improves business. Explain how and suggest ways to improve business through effective communication.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Questions and Answers paper.</li> <li>▪ MCQ's paper.</li> </ul>	



## Supportive Notes

### Assessment Context

- These learning units may be assessed on the job, off the job or a combination of on and off the job demonstrated by an individual working alone. In some areas continuous assessment may be required to gauge the competency.
- Assessment of the practical skills must take place only after a period of supervised practice and repetitive experience. If work place conditions are not available, assessment is simulated and that the work place conditions are acceptable.
- The prescribed outcome must be achieved without direct supervision.
- Competency should be assessed within the context of the qualification being sought.

### Critical Aspects

Assessment must confirm that the candidate is able to:

- i. Apply the health and safety legislation while working.
- ii. Use fire extinguishers.
- iii. Identify and use the automotive tools.
- iv. Select, handle and use hand tools, workshop tools safety and properly.
- v. Diagnose problems in different fuel systems and make the necessary adjustment.
- vi. Diagnose and service the lubricating, cooling, systems.
- vii. Remove, dismantle, check assemble and refit the transmission.
- viii. Replace fuel filter.
- ix. Replace the transmission systems components.
- x. Service of various mechanical steering gear boxes.
- xi. Service of power steering.
- xii. Replace Air Filter.
- xiii. Service of Brake Fluid Mechanism.
- xiv. Service of Battery and its components.
- xv. Service of Chassis.
- xvi. Service Fuel Filter.
- xvii. Change of Oil.
- xviii. Explain Importance of Communication.
- xix. Adjust the brake system.
- xx. Bleed the brake system.
- xxi. Connect the battery.
- xxii. Identify and connect the charging system connections.
- xxiii. Identify and demonstrate the drawings.

### **Assessment Condition**

The candidate will have access to all tools, equipment, materials and documentation required.

The candidates will be permitted to refer the following documents:

- Relevant workplace procedure.
- Relevant product and manufacturing specifications.
- Relevant drawings, manuals, codes, standards and reference material.

The candidate will be required to:

- Orally or by other methods of communication, answer, questions put forward by the assessor.
- Identify superiors who can be approached for the collection of competency evidence where appropriate.
- Present evidence of credit for any off job training related course.

### **Special Notes**

During assessment the individual will:

- Demonstrate safe working practices all the times.
- Communicate information about processes, events or tasks being under taken to ensure a safe and efficient working environment.
- Take the responsibility for the quality of his/her own work.
- Plan tasks in all situations and review tasks requirements as appropriate.
- Perform all tasks in accordance with standard operation procedures.
- Perform all tasks to specifications.
- Use accepted engineering techniques, practices, processes and work place procedures.
- Items requiring specialize repair will be sent to appropriate specialties.

The tasks involved will be completed within reasonable time frames relating to typical work place activities. The resources required for assessment include tools, equipment and machines listed within these learning units. The completed product should comply with the respective industrial standards.

### **Resources required**

Materials, tools, equipment and machines are listed within the learning units.

## List of Tools, Machinery & Equipment

S.No.	Name of Item / Equipment / Tools	Qty
1.	Jacked.	
2.	Grease gun / pump.	
3.	Spanner Set.	
4.	Strap watch.	
5.	Oil container.	
6.	Allen keys.	
7.	Lubricating Equipment.	
8.	Screwdriver sets.	
9.	Battery Clamp Puller.	
10.	Battery Cleaning Kit.	
11.	Hydrometer.	
12.	Battery Charger.	
13.	Viscosity Meter.	
14.	Star key set.	
15.	Torque wrench.	
16.	Blower / Air gun.	
17.	Air Compressor portable.	
18.	Fire extinguisher.	
19.	Fire safety equipment.	
20.	Water Pipe.	
21.	Mobile Unit.	

## List of Consumable Supplies

S.No.	Name of Item / Equipment / Tools	Qty
1.	Kerosene Oil.	
2.	Lubrication Oil.	
3.	Chassis.	
4.	Cotton Waste.	
5.	Duster (Cotton).	
6.	Lubrication Oil SAE - 40.	
7.	Grease (Tin Pack).	
8.	Oil Filters.	
9.	Air Filters.	
10.	Fuel Filters.	
11.	Battery Cable and Clamp.	
12.	Battery Terminals.	
13.	Distilled Water.	
14.	Brake fluid.	
15.	Fire Extinguishers.	
16.	Safety Shoes.	
17.	Safety Gloves.	
18.	Safety Goggles.	
19.	Safety Helmet.	
20.	Safety Rules Chart.	
21.	Communication Recorder.	
22.	Coolant Mixture.	
23.	Fuses.	
24.	Relays.	
25.	Radiator cleaning wire.	
26.	Cleaning Brush Steel.	
27.	Head Light Bulbs.	