

## **Auto Mechanic (Petrol) Competency Standard**

### **Title- A: Apply Safety Precautions at Workplace**

**Overview:** This Competency Standard identifies the competencies required to apply occupational health and safety procedures at workplace by Auto Mechanic Petrol in accordance with the organization's approved guidelines and procedures. Trainee will be expected to identify hazards in workplace, comply health and safety precautions, use of personal protective equipment and practicing safe work habits at workplace at all times.

<b>Unit of Competency</b>	<b>Performance Criteria</b>	<b>Knowledge &amp; Understanding</b>	<b>Tools &amp; Equipment</b>
A1. Apply Personal Safety measures	<p>You will be able to:</p> <p>P1. Select personal protective equipment in terms of type and quantity according to work orders.</p> <p>P2. Wear personal protective equipment.</p> <p>P3. Adjust and maintain personal protective equipment.</p> <p>P4. Ensure personal protective equipment is cleaned and stored in proper place</p>	<p>You will be able to:</p> <p>K1. Importance of using Personal Protective Equipment</p> <p>K2. Explain types of personal protective equipment (PPE)</p> <p>K3. Describe Protective clothing and equipment to be worn and where it can be obtained</p> <p>K4. Safely maintaining the PPEs</p>	<p>Safety shoes, Safety gloves, Safety goggles, Safety helmet, Fire extinguisher, Smoke alarm, First aid box Health and safety manual.</p>
A2. Apply workplace safety measures	<p>You will be able to:</p> <p>P1. Apply work place safety procedures as per standing operating procedures (SOP)</p> <p>P2. Perform housekeeping in the workplace</p> <p>P3. Ensure tools or equipment are in place and available in proper place.</p> <p>P4. Apply following safety measures at workplace</p> <ul style="list-style-type: none"> <li>• Ensure ventilation</li> <li>• No inflammable material nearby</li> <li>• Availability of fire extinguishers</li> <li>• No light reflection</li> </ul> <p>P5. Proper housekeeping at workplace</p> <p>P6. Ensure the availability of first aid box at workplace</p>	<p>You will be able to:</p> <p>K1. Explain Importance of safety at work and its implications</p> <p>K2. Describe work safety procedures and guidelines</p> <p>K3. Define procedure for cleaning and storing of tools and equipment at workplace</p>	<p>Fire extinguisher, Tool box/bins, Safety covers, First aid box, Safety equipment,, personal protective equipment (PPE)</p>

## TITLE- B: Perform Bench Work

**Overview:** This competency standard identifies the competencies you need to perform basic bench work operations using different tools and equipment. You will be expected to perform sawing, filing, threading and drilling using hand tools Trainee will have sufficient knowledge that is related for this work.

Unit of Competency	Performance Criteria	Knowledge & Understanding	Tools & Equipment
<p><b>B1. Perform Sawing on job</b></p>	<p><i>You will be able to:</i></p> <p>P1. Select appropriate blade according to job requirement.</p> <p>P2. Set the blade in frame of hacksaw as per procedure.</p> <p>P3. Mark the job according to given drawing.</p> <p>P4. Ensure the work-piece is clamped firmly and properly.</p> <p>P5. Adapt methods and techniques for sawing that is appropriate to job requirement.</p> <p>P6. Follow marked line during sawing to ensure accuracy</p>	<p><i>You will be able to:</i></p> <p>K1. Define Properties of metals.</p> <p>K2. Explain types of Hacksaw blades.</p> <p>K3. Describe the Procedure of setting blade in hacksaw.</p> <p>K4. Explain how to Interpret basic drawings.</p> <p>K5. Describe the main methods of measurements.</p> <p>K6. Describe method of marking the work-piece.</p> <p>K7. Explain the Procedure of clamping the work-piece.</p> <p>K8. Explain the methods and techniques of sawing.</p>	<p>Work bench</p> <p>Bench vice</p> <p>Tri square</p> <p>Scriber</p> <p>Hand hack saw with blade</p> <p>Steel Rule</p>
<p><b>B2. Prepared Work Piece to required Smoothness</b></p>	<p><i>You will be able to:</i></p> <p>P1. Select file according to the operation.</p> <p>P2. Ensure the work-piece is clamped firmly and properly.</p> <p>P3. Use file according to required dimension and finishing.</p>	<p><i>You will be able to:</i></p> <p>K1. Explain types of files</p> <p>K2. Explain the use of measuring tools</p> <p>K3. Describe the Use of marking tools</p> <p>K4. Describe the Procedure of clamping the</p>	<p>Work bench with vice</p> <p>Files</p> <p>Scriber</p> <p>Steel rule</p>

	<p>P4. Apply techniques for filing that as per job requirement.</p> <p>P5. Ensure surface and size accuracy of work-piece.</p>	<p>work-piece.</p> <p>K5. Describe various methods of filing flat, curved edges and even surfaces</p> <p>K6. Explain the importance of Personal safety precautions.</p>	<p>Try square</p>
<p><b>B3. Prepare holes using Drilling Machine</b></p>	<p><b><i>You will be able to:</i></b></p> <p>P1. Set up drilling machine for producing holes according to job requirement.</p> <p>P2. Operate the machine tool controls safely and correctly in line with operational procedures.</p> <p>P3. Prepare components to the required quality and within the specified dimensional accuracy.</p> <p>P4. Check quality of work piece suitable intervals.</p>	<p><b><i>You will be able to:</i></b></p> <p>K1. Explain the Procedure of setting up of drilling machine.</p> <p>K2. Explain the Safe Procedure of operating drilling machine.</p> <p>K3. Explain the types of drilling machines.</p> <p>K4. Describe the importance of Selecting and adjusting speed and feed of drilling machine.</p> <p>K5. Explain the Importance of coolants in drilling operations.</p>	<p>Drilling Machines</p> <p>Drill chuck with Key</p> <p>Machine Vice</p> <p>Marking Tools</p> <p>Measuring Tools</p> <p>Drill Sleeve and Socket</p>
<p><b>B4. Prepare threads on Work Piece</b></p>	<p><b><i>You will be able to:</i></b></p> <p>P1. Select tap and die according to job requirement.</p> <p>P2. Clamp work-piece in the vice properly.</p> <p>P3. Ensure tap and die alignment.</p> <p>P4. Use lubricants during threading for smooth cutting.</p>	<p><b><i>You will be able to:</i></b></p> <p>K1. Explain the Types of taps and dies.</p> <p>K2. Explain the Use of tap set according to safe process.</p> <p>K3.explain the mm and inches system tap set.</p> <p>K4.explain the Importance of using lubricants during threading.</p>	<p>Bench and bench vice</p> <p>Tap set</p> <p>Tap handle</p> <p>Lubricant</p> <p>Tri square</p>

## Title- C: Perform service of engine

**Overview:** This competency standard identifies the competencies required to remove, dismantle, check/inspect, and reinstall the allied engine systems according to slandered operating procedure and specification. Trainee will have sufficient knowledge for the basis of this work.

Unit of Competency	Performance Criteria	Knowledge& Understanding	Tools & Equipment
<b>C1: Perform service of Fuel system</b>	<p><b>You will be able to:</b></p> <p>P1 Arrange tools and equipment required to diagnose fuel system problems</p> <p>P2 Follow the instructions of repair manual to diagnose fuel system problems</p> <p>P3 Replace the fuel filter</p> <p>P4 Replace the fuel pump (mechanical and electrical)</p> <p>P5 Service the carburetor</p> <p>P6 Use the scanner</p> <p>P7 Replace the sensor</p>	<p><b>You will be able to:</b></p> <p>K1 Read and interpret repair manual</p> <p>K2 Identify and locate Electronic Fuel Injection (EFI) parts.</p> <p>K3. Describe the function of fuel pump motor</p> <p>K4. Describe the function of fuel filter</p>	<p>Standard tool kit, scanner. Repair manual</p>
<b>C2: Perform Service of lubrication system</b>	<p><b>You will be able to:</b></p> <p>P1: Arrange tools and equipment required to Service engine lubrication system</p> <p>P2. Follow the instructions of repair manual to Service engine lubrication system</p> <p>P3 Change engine oil and oil filter</p> <p>P4 Service of oil pump</p> <p>P5 Check the engine oil pressure</p> <p>P6 Follow safety precautions at workplace</p>	<p><b>You will be able to:</b></p> <p>k1 Explain Purpose and construction of lubrication system</p> <p>K2 Describe the function of oil and oil filter</p> <p>K3 Describe the working principle of oil pressure switch</p> <p>K4 Describe the types and functions of oil pump</p>	<p>Filter wrench, oil pressure gauge, SSTs, spanners, socket set, repair manual</p>
<b>C3: Perform Service of cooling system</b>	<p><b>You will be able to:</b></p> <p>P1 Arrange tools and equipment required to Service engine cooling system</p> <p>P2 Adjust the fan belt deflection</p> <p>P3 Replace hose pipe</p> <p>P4 Replace thermostat valve</p> <p>P5 Check radiator cap</p>	<p><b>You will be able to:</b></p> <p>K1 Describe Purpose of cooling system</p> <p>K2 Explain construction of cooling system</p> <p>K3 Describe the function of radiator pressure cap</p> <p>K4 Explain the safety precautions regarding</p>	<p>Filter wrench, oil pressure gauge, SSTs, spanners, pliers, screw drivers, PPE</p>

	P6 Follow safety precautions at workplace	personal health and workplace	
<b>C4: Perform service of Exhaust system</b>	<p><b>You will be able to:</b></p> <p>P1: Arrange tools and equipment required to service exhaust system</p> <p>P2 Replace muffler assy.</p> <p>P3 Replace oxygen sensor</p>	<p><b>You will be able to:</b></p> <p>K1 Explain Purpose of exhaust system</p> <p>K2 Describe construction of exhaust system</p>	spanners, socket set, screw drivers
<b>C5: Perform. Service of ignition system</b>	<p><b>You will be able to:</b></p> <p>P1 Arrange tools and equipment required to diagnose ignition system problems</p> <p>P2 Follow the instructions of repair manual to diagnose ignition system problems</p> <p>P3 Replace spark plug</p> <p>P4 Adjust CB point gap</p> <p>P5 Set the ignition timing with timing gun.</p> <p>P6 Measure resistance of ignition coil</p>	<p><b>You will be able to:</b></p> <p>K1 Explain Purpose and construction of ignition system</p> <p>K2 Explain the usage of tools and equipment for diagnosing ignition system problems</p> <p>K3 Describe the distributor ignition system</p>	Timing gun, multimeter Spanners, socket set, T handles

## Title-D: Perform service of power train

**Overview:** This competency standard identifies the competencies required to use to remove install powertrain components as clutch, transmission, propeller shaft, differential, axles and front wheel drive design, Trainee will have sufficient knowledge to provide basis for his work

Unit of Competency	Performance Criteria	Knowledge& Understanding	Tools & Equipment
<b>D1: Perform Servicing of clutch</b>	<p><i>You will be able to:</i></p> <p>P1: Arrange tools and equipment required to service clutch system of vehicle</p> <p>P2 Replace clutch plate.</p> <p>P3 Adjust clutch pedal free play</p>	<p><i>You will be able to:</i></p> <p>K1 Describe Purpose of clutch system</p> <p>K2 Explain construction of clutch system</p>	<p>Jack, safety stand, spanner set, socket set, screw drivers, hammers, lock pliers, PPE</p>
<b>D2: Perform Servicing of transmission</b>	<p><i>You will be able to:</i></p> <p>P1Change transmission oil</p> <p>P2Dismantle manual gearbox.</p> <p>P3Inspect manual gearbox.</p> <p>P4 Servicing manual gearbox.</p>	<p><i>You will be able to:</i></p> <p>K1Explain Purpose of transmission system</p> <p>K2Describe construction of transmission system</p>	<p>Jack, safety stand, lift, spanner set, screw drivers, hammers, lock pliers</p>
<b>D3: Perform Servicing of propeller shaft</b>	<p><i>You will be able to:</i></p> <p>P1 Remove the propellers</p> <p>P2 Service the propellers</p> <p>P3 Reconnect the propellers</p> <p>P4Replace universal joints.</p>	<p><i>You will be able to:</i></p> <p>K1Describe Purpose of propeller shaft</p> <p>K2Explain construction of propeller shaft system</p>	<p>lift, spanner set, socket set, screw drivers, hammers, lock pliers</p>

<p><b>D4: Perform Servicing of differential</b></p>	<p><i>You will be able to:</i></p> <p>P1 Change differential oil</p> <p>P2 Dismantle the differential assembly</p> <p>P3 Check the differential assembly</p> <p>P4 Assemble the differential assembly</p> <p>P5 Adjust backlash as per specification</p> <p>P6 Replace front axle assembly</p>	<p><i>You will be able to:</i></p> <p>K1 Explain Purpose of differential system</p> <p>K2 Describe construction of differential system</p> <p>K3 Define backlash</p>	<p>Jack, safety stand, lift, spanner set, socket set, oil gun, screw drivers, Hammers, stand.</p>
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## Title-E: Perform Service of Suspension, Steering & Brakes

**Overview:** This competency standard identifies the competencies required to use to remove install components as Suspension, Steering & Brakes, Trainee will have sufficient knowledge to provide basis for his work.

Unit of Competency	Performance Criteria	Knowledge & Understanding	Tools & Equipment
<b>E1: Perform Servicing of suspension</b>	<p><b>You will be able to:</b></p> <p>P1 Arrange tools and equipment required.</p> <p>P2 Follow the instructions of repair manual.</p> <p>P3 Adopt the safety measures</p> <p>P4 Replace shock absorber</p> <p>P5 Perform service of suspension system springs.</p>	<p><b>You will be able to:</b></p> <p>K1 Describe Purpose of suspension system</p> <p>K2 Define shock absorber</p> <p>K3 Explain types of springs</p>	<p>hammers, ball joint puller, tire lever, wheel spanner, spanner set, sockets, screw drivers</p>
<b>E2: Perform Servicing of steering</b>	<p><b>You will be able to:</b></p> <p>P1 Inspect the following components of steering system</p> <ul style="list-style-type: none"> <li>• Steering box</li> <li>• Steering column</li> <li>• Intermediate shaft (cross)</li> <li>• Ball joints</li> <li>• Tie rod end set</li> </ul> <p>P2 Remove rack and pinion type steering.</p> <p>P3 Service rack and pinion type steering.</p> <p>P4 Refit rack and pinion type steering.</p> <p>P3 Service ball joints and linkages.</p>	<p><b>You will be able to:</b></p> <p>K1 Explain Purpose of steering system</p> <p>K2 Explain construction of steering system</p> <p>K3 Describe ball joints</p> <p>K4 Describe types of steering gear box</p>	<p>hammers, ball joint puller, wheel spanner, spanner set, scanner, screw drivers</p>
<b>E3: Perform Servicing of brake</b>	<p><b>You will be able to:</b></p> <p>P1 Adjust brake pedal</p> <p>P2 Inspect brake servo</p> <p>P3 Replace master cylinder kit</p> <p>P4 Adjustment and replacement of brake Shoes.</p> <p>P5 Bleed hydraulic brake.</p> <p>P6 Replace disc pad.</p> <p>P7 Adjust parking brake</p>	<p><b>You will be able to:</b></p> <p>K 1 Describe Purpose of brake system</p> <p>K 2 Explain construction of brake system</p> <p>K 3 Explain operation of brake system</p> <p>K 4 Describe bleeding the brake hydraulic system</p>	<p>Tire lever, wheel spanner, screw drivers, fluid, plier, Bleeder hose, glass jar ,pressure bleeder tank</p>

## Title-F: Perform Engine Testing

**Overview:** This competency standard identifies the competencies required to use to test and measure various values of engine with the help of compression tester vacuum gauge, leakage tester, dwell tester and engine analyzer. Trainee will be required to get information according to the operating instruction to their manual. He will have sufficient knowledge for the basis of his work

Unit of Competency	Performance Criteria	Knowledge & Understanding	Tools & Equipment
<b>F1: Perform engine compression test</b>	<p><i>You will be able to:</i></p> <p>P1 Arrange tools and equipment required to engine compression test</p> <p>P2 Inspect the engine leakages</p> <p>P3 Perform engine compression test</p> <p>P4 Write down the result of compression test</p> <p>P5 Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>k1 Describe Engine compression test</p> <p>K2 Define engine testing instruments</p> <p>K3 Differentiate between dry compression test and wet compression test</p>	<p>Spanners, socket set, pliers, screw drivers, compression gauge, fuel pressure gauge, filler gauge, oil pressure gauge, air compressor</p>
<b>F2: Perform engine cylinder leakage test</b>	<p><i>You will be able to:</i></p> <p>P1 Arrange tools and equipment required to engine leakage test</p> <p>P2 Follow the instructions of repair manual</p> <p>P3 Remove all spark plugs</p> <p>P4 Disconnect the air cleaner</p> <p>P5 Remove the oil-filler cap</p> <p>P6 Remove the radiator cap</p> <p>P7 Fill the radiator to the proper level</p> <p>P8 Block the throttle wide-open</p> <p>P9 Perform engine leakage test</p> <p>P10 Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1 Describe cylinder leakage test</p> <p>K2 Explain the procedure of cylinder leakage test</p>	<p>Spanners, socket set, pliers, screw drivers, oil pressure gauge, simulator, repair manual, Cylinder leakage tester, air compressor</p>
<b>F3: Perform engine vacuum test.</b>	<p><i>You will be able to:</i></p> <p>P1 Arrange tools and equipment required to engine vacuum test</p> <p>P2 Connect the vacuum gauge to the intake manifold</p> <p>P3 Perform engine vacuum test</p> <p>P4 Note the vacuum reading at idle and other speeds</p>	<p><i>You will be able to:</i></p> <p>K1 Explain engine vacuum test</p> <p>K2 List common symptoms of engine mechanical problems</p>	<p>Spanners, socket set, pliers, screw drivers, vacuum gauge, , filler gauge, oil pressure gauge, scanner, air compressor, repair manual</p>

	P5 Follow safety precautions at workplace		
<b>F4: Perform engine tuneup</b>	<p><b>You will be able to:</b></p> <p>P1 Arrange tools and equipment required to engine tuneup</p> <p>P2 Follow the instructions of engine service manual</p> <p>P3 Perform engine tuneup procedure</p> <p>P4 Follow safety precautions at workplace</p>	<p><b>You will be able to:</b></p> <p>K1 Define engine tuneup</p> <p>K2 What is a tuneup and how is it performed procedure</p> <p>K3 Describe ignition timing.</p>	Spanners, socket set, pliers, screw drivers, filler gauge, scanner, stroboscopic timing light, engine analyzer repair manual, personal protective equipment (PPE)