

Name: \_\_\_\_\_

**Small Engine Technician**

**Directions:**

Evaluate the student by checking the appropriate number to indicate the degree of competency.

**Rating Scale (0-6):**

- 0 No Exposure** – no experience/knowledge in this area; program/course did not provide instruction in this area
- 1 Unsuccessful Attempt** – unable to meet knowledge or performance criteria and/or required significant assistance
- 2 Partial Demonstration** – met some of the knowledge or performance criteria with or without minor assistance
- 3 Knowledge Demonstrated** – met knowledge criteria without assistance at least once
- 4 Performance Demonstrated** – met performance criteria without assistance at least once
- 5 Repetitive Demonstration** – met performance and/or knowledge criteria without assistance on multiple occasions
- 6 Mastered** – successfully applied knowledge or skills in this area to solve related problems independently

**NOTES:**

\* = Core competencies (essential for the first day on the job).

The numbers in brackets [e.g., A01] reflect the IDs used in computerized tracking software.

0	1	2	3	4	5	6	1. Basic Personal Safety	Notes:
							*1. Demonstrate safe work habits by using approved eye, ear, and skin protection [S01]	
							*2. Demonstrate safe handling of hazardous materials [S02]	
							3. Read and interpret MSDS and other safety publications [S03]	
							4. Identify governmental regulations (EPA, DNR, ANSI) [S04]	
							*5. Recognize industry accepted procedures for using proper safety devices, including lock out/tag and blocking devices [S05]	
							*6. Use basic personal safety practices (no jewelry, no loose clothing, long hair tied back) [S06]	
							*7. Demonstrate proper lifting practices [S07]	
							Other:	

0	1	2	3	4	5	6	2. Lab and Tool Safety	Notes:
							*1. Demonstrate the safe use of lifting and hoisting devices [T01]	
							*2. Maintain a clean and safe work area [T02]	
							*3. Demonstrate the safe and proper use of hand tools [T03]	
							*4. Demonstrate the safe and proper use of power tools [T04]	
							*5. Identify the proper use of fire extinguishers [T05]	
							*6. Recognize standard emergency evacuation procedures [T06]	
							*7. Identify fire hazards [T07]	
							*8. Identify spill containment [T08]	
							*9. Demonstrate safe use of cleaning equipment and chemicals [T09]	
							Other:	

0	1	2	3	4	5	6	3. Lab Procedures	Notes:
							*1. Demonstrate good customer relations skills [A06]	
							*2. Document service work and supplies on work orders [A07]	
							*3. Read and interpret service and parts manuals [A08]	
							*4. Use basic computer skills [A09]	
							5. Demonstrate proper use of labor time guides, flat rate time, and billing efficiency [A10]	
							*6. Explain warranty claim process [A11]	
							7. Estimate repair vs. replacement costs (labor, parts) [A12]	
							Other:	

0	1	2	3	4	5	6	4. Tools and Equipment	Notes:
							*1. Identify industry-related hand tools [B01]	
							*2. Demonstrate the proper use of hand tools [B02]	
							*3. Identify precision measuring tools and equipment [B03]	
							*4. Demonstrate the proper use and care of precision measuring tools and equipment [B04]	
							*5. Identify industry-related power tools [B05]	
							*6. Demonstrate the proper use and care of industry-related power tools [B06]	
							*7. Identify and use tools to restore threads on fasteners [B09]	
							*8. Identify diagnostic tools [B10]	
							*9. Demonstrate the proper use and care of diagnostic tools [B11]	
							Other:	

0	1	2	3	4	5	6	5. Fasteners	Notes:
							1. Identify and select industry-related fasteners [C01]	
							2. Measure bolts and threads (SAE grade and metric) [C02]	
							*3. Determine proper torque value for fasteners [C03]	
							*4. Demonstrate proper torquing technique for fasteners [C04]	
							5. Identify and select proper gaskets and sealants [C05]	
							Other:	

0	1	2	3	4	5	6	6. Engine/Product Identification	Notes:
							*1. Identify the manufacturer, model, serial number, and type [U01]	
							*2. Identify emission compliance engines [U02]	

								*3. Identify safety compliance parts [U03]	
								Other:	

0	1	2	3	4	5	6	7. Four-Stroke Cycle Engines	Notes:
							*1. Describe the operating cycle of the four-stroke cycle engine [N02]	
							*2. Disassemble a four-stroke cycle engine [N03]	
							3. Inspect and service a cylinder [N04]	
							4. Inspect and service the pistons, rings, and connecting rod [N05]	
							5. Inspect and service a crankshaft assembly [N06]	
							*6. Inspect and service a valve train assembly [N07]	
							*7. Reassemble a four-stroke cycle engine [N08]	
							*8. Identify the differences between L-head and overhead valve trains [N09]	
							*9. Test compression [N10]	
							Other:	

0	1	2	3	4	5	6	8. Two-Stroke Cycle Engines	Notes:
							*1. Describe the operating cycle of the two-stroke cycle engine [O02]	
							*2. Disassemble a two-stroke cycle engine [O03]	
							*3. Inspect and service a cylinder [O04]	
							4. Inspect and service the pistons, rings, and connecting rod [O05]	
							5. Inspect and service a crankshaft assembly [O06]	
							6. Check and replace reed valves [O07]	
							*7. Reassemble two-stroke cycle engines [O08]	
							*8. Test compression [O09]	
							Other:	

0	1	2	3	4	5	6	9. Emissions	Notes:
							1. List types of emissions [V01]	
							*2. Describe the consequences of noncompliance with emissions standards [V02]	
							3. Comply with manufacturer's emissions standards [V03]	
							Other:	

0	1	2	3	4	5	6	10. Troubleshooting	Notes:
							*1. Identify the system and components [M04]	
							*2. Recognize the sequence of events in a system [M05]	
							*3. Access technical manuals to find information and specifications [M06]	
							4. Interview the customer and/or operator for information [M07]	
							5. Identify exact symptoms [M08]	
							6. Accurately separate systems [M09]	
							*7. Make a complete physical examination [M10]	
							*8. Replicate or simulate a given problem [M11]	
							*9. Determine and classify all symptoms [M12]	
							*10. Perform specific tests using tools to determine which components work correctly [M13]	
							*11. Record the results on a worksheet [M14]	
							*12. Make repairs and retest to verify the repair [M15]	
							*13. Communicate with the customer regarding the cause and prevention of future problems [M16]	
							Other:	

0	1	2	3	4	5	6	11. Fuel Systems	Notes:
							*1. Test, repair, or replace fuel pump [D01]	
							*2. Test, repair, or replace fuel filters and strainers [D02]	
							*3. Remove, clean, and replace fuel tank, shut-off valves, fuel lines, fuel hoses, and connections [D03]	
							*4. Clean, rebuild, or replace diaphragm-type carburetor [D04]	
							*5. Clean, rebuild, or replace float-type carburetor [D05]	
							*6. Adjust fuel mixture and check for air leaks [D06]	
							*7. Service oil-foam air cleaner [D08]	
							*8. Service dry-element air cleaner [D09]	
							*9. Properly dispose of contaminated fuel [D10]	
							*10. Explain the theory and function of electronic fuel injection [D11]	
							11. Identify the types and grades of gasoline used in power equipment [D12]	
							*12. Describe the use of a fuel additive for storage [D13]	
							*13. Identify purge/prime systems [D14]	
							*14. Identify fuel venting systems [D15]	

								*15. Troubleshoot a fuel system [D16]	
								Other:	

0	1	2	3	4	5	6	12. Governor System	Notes:
							*1. Identify the purpose of the governor system [E04]	
							*2. Inspect, adjust, and repair air-vane governor system [E01]	
							*3. Inspect, adjust, and repair mechanical governor system and linkages [E02]	
							*4. Adjust engine RPMs to manufacturer's specifications [E03]	
							*5. Troubleshoot a governor system [E05]	
							Other:	

0	1	2	3	4	5	6	13. Electrical Systems	Notes:
							*1. Demonstrate safe work habits when working with electrical systems [F07]	
							*2. Explain basic electrical theory [F08]	
							3. Describe series circuit [F09]	
							4. Describe parallel circuit [F10]	
							*5. Explain different types of circuit failures [F11]	
							*6. Demonstrate applicable test procedures for testing series and parallel circuits [F12]	
							*7. Check continuity in circuits and electrical system components [F13]	
							*8. Check current flow in electric systems and components [F14]	
							*9. Inspect, test, and replace fusible links, fuses, and circuit breakers [F15]	
							10. Identify terminal and connectors used in electrical systems [F16]	
							11. Identify electrical wire sizes and selection based on anticipated current load [F17]	
							12. Read and interpret electrical meters [F01]	
							13. Read electrical schematics [F02]	
							*14. Test, repair, and/or replace safety interlock [F04]	
							*15. Test, repair, and/or replace charging system components [F05]	
							*16. Test and replace fuel system, lubrication, safety, and temperature sending units [F18]	
							*17. Test and replace electrical PTO clutches [F19]	
							*18. Explain storage battery theory and operation [F20]	
							*19. Remove, clean, and replace battery [F03]	
							*20. Perform specific gravity test on battery cell electrolyte [F21]	

								*21. Determine battery state of charge using DMM (Digital Multimeter) [F22]	
								*22. Troubleshoot an electrical system [F23]	
								Other:	

0	1	2	3	4	5	6	14. Ignition Systems	Notes:
							*1. Explain the theory of operation of the ignition system [G06]	
							*2. Identify the components and function of an ignition system [G07]	
							*3. Remove and service spark plug [G01]	
							*4. Test and repair breaker ignition system [G03]	
							*5. Test and repair electronic ignition system [G08]	
							*6. Identify the components and function of a battery ignition system [G09]	
							*7. Identify the function and components of an electronic ignition system [G10]	
							*8. Identify the components and function of a magneto ignition system [G11]	
							*9. Troubleshoot an ignition system [G12]	
							Other:	

0	1	2	3	4	5	6	15. Lubrication Systems	Notes:
							*1. Explain the importance of lubrication [H08]	
							*2. List common oil contaminants [H09]	
							*3. Change engine oil and oil filter [H01]	
							*4. Properly dispose of oil and oil filter [H10]	
							*5. Service crankcase breather [H02]	
							*6. Inspect, repair, and/or replace pressure lubrication system [H03]	
							*7. Inspect and replace splash lubrication components [H04]	
							*8. Locate and repair leaking gaskets and seals [H05]	
							*9. Demonstrate the ability to mix gas and oil for a two-stroke cycle engine [H06]	
							*10. Select proper oil [H07]	
							*11. Troubleshoot a lubrication system [H11]	
							Other:	

0	1	2	3	4	5	6	16. Cooling Systems	Notes:
							*1. Describe the concepts of heat transfer [I07]	
							*2. Explain the purpose of a cooling system [I08]	

									*3. Identify the major types of cooling systems used on power equipment [I09]	
									*4. Describe air-cooled system nomenclature and function [I10]	
									*5. List the major causes of air-cooled engine overheating [I11]	
									*6. Describe normal cooling-related service procedures performed on an air-cooled engine [I12]	
									*7. Describe liquid-cooled nomenclature and function [I13]	
									*8. List major causes of liquid-cooled engine overheating [I14]	
									*9. Describe the function of a thermostat [I15]	
									*10. Describe the function of a water pump [I16]	
									*11. Describe the function of antifreeze [I17]	
									*12. Remove and replace water pump/fan belt drive [I03]	
									*13. Perform a cooling system pressure test [I05]	
									*14. Service an air-cooled system [I01]	
									*15. Service a liquid-cooled system [I02]	
									*16. Remove, check, and replace thermostat [I04]	
									*17. Remove, check, and replace radiator [I06]	
									*18. Troubleshoot a cooling system [I18]	
									Other:	

0	1	2	3	4	5	6	17. Exhaust Systems	Notes:
							1. Describe exhaust system nomenclature and function [J03]	
							2. Describe proper service cleaning procedures for exhaust ports and spark arrestor screens [J04]	
							*3. Service and/or replace a two-stroke cycle exhaust system [J01]	
							*4. Service and/or replace a four-stroke cycle exhaust system [J02]	
							*5. Troubleshoot an exhaust system [J05]	
							Other:	

0	1	2	3	4	5	6	18. Recoil Starting Systems	Notes:
							*1. Remove, repair, and/or replace recoil starter [K01]	
							*2. Remove, inspect, and replace starter clutch [K02]	
							*3. Demonstrate safe spring replacement procedures [K03]	
							*4. Troubleshoot a recoil starting system [K04]	
							Other:	

0	1	2	3	4	5	6	19. Electrical Starting Systems	Notes:
							*1. Describe engine starting systems, nomenclature, and function [L04]	
							*2. Identify the components of a DC electrical starting system and describe the function of each [L05]	
							*3. Identify the components of an AC electrical starting system and describe the function of each [L06]	
							4. Perform 12-volt DC starter motor current draw test [L07]	
							*5. Remove and replace starter motor [L02]	
							*6. Remove, test, and replace starter relay [L08]	
							*7. Troubleshoot an electrical starting system [L09]	
							Other:	

0	1	2	3	4	5	6	20. Charging Systems	Notes:
							*1. Define electrical/electronic terms that are common in the power equipment industry [W01]	
							*2. Describe charging system nomenclature and function [W02]	
							*3. Identify types of charging systems [W03]	
							*4. Describe a DC amps test [W04]	
							*5. Describe an AC volts test [W05]	
							*6. Explain the function of a diode [W06]	
							*7. Describe a resistance test [W07]	
							8. Perform current drain test using DC shunt [W08]	
							*9. Remove and replace regulator/rectifier [W09]	
							*10. Troubleshoot a charging system [W10]	
							Other:	

0	1	2	3	4	5	6	21. Power Train Systems	Notes:
							1. Identify the component parts of a manual transmission [P01]	
							2. Identify the component parts of a transaxle [P02]	
							3. Identify the component parts of a clutch system [P03]	
							4. Identify the component parts of a hydrostatic transmission [P04]	
							*5. Identify the component parts of brake systems [P05]	
							*6. Isolate and troubleshoot a power train system [P06]	
							Other:	



0	1	2	3	4	5	6	22. Lawn and Garden Equipment	Notes:
							*1. Adjust tension and alignment of pulleys and belts [Q01]	
							*2. Sharpen and balance rotary blades [Q02]	
							*3. Adjust and replace control cables/linkages [Q03]	
							*4. Service decks and accessories [Q04]	
							*5. Lubricate cassis components [Q05]	
							*6. Inspect and adjust brakes [Q06]	
							*7. Inspect and adjust clutch [Q07]	
							Other:	

0	1	2	3	4	5	6	23. Failure Analysis	Notes:
							1. Identify the effects of abrasive ingestion on engine components [X01]	
							2. Identify the entrance path of abrasives on several engine failure examples [X02]	
							3. Identify the effects of insufficient lubrication on engine components [X03]	
							4. Define cause of failure on several engine failure examples [X04]	
							5. Identify two-stroke lubrication/fuel quality failure root cause [X05]	
							6. Identify the effects of incorrect/no lubricant [X06]	
							7. Identify and describe engine failures caused by phase separation of fuel [X07]	
							8. Identify the effect of overheating on engine component parts [X08]	
							9. Identify overheating effects on two-stroke cycle engines due to poor exhaust system maintenance [X09]	
							10. Define denotation, preignition, and list the effects on engine components [X10]	
							11. Identify two-stroke engine failures caused by stale fuel varnish [X11]	
							12. Identify engine failure caused by lean mixture [X12]	
							13. Identify the effects of overspeeding on engine component parts [X13]	
							14. Identify the signature break on a connecting rod on several engine failure examples [X14]	
							15. Identify exhaust port piston scoring and large bearings due to overspeeding [X15]	
							16. Identify the effects of excessive vibration on engine block and mounting base [X16]	
							Other:	

0	1	2	3	4	5	6	24. Leadership Competencies	Notes:
							*1. Determine an understanding of VICA, its structure, and activities [R01]	
							*2. Demonstrate an understanding of one's personal values [R02]	

										*3. Perform tasks related to effective personal management skills [R03]	
										*4. Demonstrate good interpersonal skills [R04]	
										*5. Demonstrate etiquette and courtesy [R05]	
										*6. Demonstrate effectiveness in and oral written communication [R06]	
										*7. Develop and maintain a code of professional ethics [R07]	
										*8. Maintain a good professional appearance [R08]	
										*9. Perform tasks related to securing and terminating employment [R09]	
										*10. Perform basic parliamentary procedures in group meetings [R10]	
										Other:	