Name: _____ **Heavy Equipment Maintenance and Repairer**

Directions:
Evaluate the student by entering the appropriate number to indicate the degree of competency achieved.

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** **Repeated 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

0	1	2	3	4	5	6	A. Demonstrate Knowledge of Basic Repair Skills	Notes:
							1. Operate safely in work place, using safety rules and regulations.	
							2. Inspect work areas for safe work environment.	
							3. Identify and use hand and power tools.	
							4. Use reference books, parts books and charts.	
							5. Perform basic mathematical calculations.	
							6. Test performance of completed repair.	
							7. Use precision measurement tools.	
							8. Perform basic computer operation (e.g. keyboarding, software manipulation, equipment diagnostics, etc.).	
							9. Demonstrate proper handling of removed/failed parts.	
							10. Adhere to environmental/regulatory requirements/codes.	
							Other:	

0	1	2	3	4	5	6	B. Perform Preventive Maintenance	Notes:
							1. Demonstrate safety procedures and precautions.	
							2. Evaluate cooling system.	
							3. Check engine lubrication system pressure an level.	
							4. Check air intake and exhaust system.	
							5. Draw lubrication and/or oil sample.	
							6. Evaluate oil conditions visually.	
							7. Check linkage adjustments.	
							8. Replace filters as recommended.	
							9. Inspect, adjust, and maintain fifth wheel.	
							10. Inspect steering linkage for wear.	

							11. Inspect and adjust brakes.	
							12. Perform air brake system test.	
							13. Change engine oil.	
							14. Change transmission and/or differential oils.	
							15. Change power steering fluid.	
							16. Lubricate chassis components.	
							17. Replace transmission and/or differential filters.	
							Other:	

0	1	2	3	4	5	6	**C. Troubleshoot and Diagnose Electrical/Electronic Systems**	**Notes:**
							1. Demonstrate safety procedures and precautions.	
							2. Demonstrate basic electronic theory and component operation.	
							3. Solve problems with basic electricity formulas.	
							4. Demonstrate basic use of diagnostic service tools.	
							5. Perform diagnostic tests of electrical and electronic components and evaluate results.	
							6. Demonstrate use of diagrams and schematics.	
							7. Remove and replace electrical and electronic components.	
							8. Demonstrate proper use of Digital Volt Ohmmeter.	
							9. Identify circuit problems including wire and connector maintenance.	
							Other:	

0	1	2	3	4	5	6	**D. Demonstrate and Troubleshoot Basic Hydraulic and Pneumatic Systems**	**Notes:**
							1. Demonstrate safety procedures and precautions specific to fluid power.	
							2. Identify basic hydraulic and pneumatic components and their operations.	
							3. Identify basic principles of hydraulics and pneumatics.	
							4. Demonstrate use of fluid power diagrams, schematics, and ISO symbols.	
							5. Test pressures and flow rates using appropriate tooling.	
							Other:	

0	1	2	3	4	5	6	**E. Perform Diagnostic and Repair of HVAC Systems**	**Notes:**
							1. Demonstrate safety procedures and precautions specific to HVAC systems.	
							2. Explain basic HVAC theory and operation.	
							3. Perform troubleshooting and diagnostic testing of HVAC systems.	
							4. Remove and replace heater and air conditioning components.	
							5. Acquire appropriate license for refrigerant handling (e.g. evacuate, reclaim, and charge system per specifications).	
							Other:	

0	1	2	3	4	5	6	**F. Identify and Troubleshoot Steering- and Suspension-Related Components**	**Notes:**
							1. Demonstrate safety procedures and precautions specific to steering and suspension.	
							2. Check and adjust axle alignment.	
							3. Inspect and service steering- and suspension-related components.	
							4. Remove and replace steering, suspension, and front axle components.	
							Other:	

0	1	2	3	4	5	6	**G. Identify, Troubleshoot, and Repair Braking Systems**	**Notes:**
							1. Demonstrate safety procedures and precautions specific to brakes.	
							2. Identify and troubleshoot cam, wedge, and disc brakes systems.	
							3. Inspect, test, and service anti-lock brake systems.	
							Other:	

0	1	2	3	4	5	6	**H. Identify and troubleshoot drive train, truck, and other on-highway components**	**Notes:**
							1. Demonstrate safety procedures and precautions specific to drive trains.	
							2. Inspect, remove, and replace clutch assembly and flywheel.	
							3. Inspect, remove, replace and adjust clutch free play and linkage.	
							4. Diagnose and repair automatic/manual transmissions and systems.	
							5. Diagnose and replace wheel bearings and wheel seals.	
							6. Troubleshoot, and repair and replace drive line and components.	
							7. Diagnose and repair differential/power dividers.	
							8. Inspect, test, and service electronic drive train control systems.	
							Other:	

0	1	2	3	4	5	6	I. Identify and Troubleshoot Drive Train and Components	Notes:
							1. Demonstrate safety procedures and precautions specific to drive trains.	
							2. Perform drive train diagnostics.	
							3. Troubleshoot drive train electronics.	
							4. Diagnose and repair power shift transmission.	
							5. Diagnose and repair steering clutches and brakes.	
							6. Diagnose and repair torque converters and dividers.	
							7. Remove and install transmission.	
							8. Remove and install differential.	
							9. Disassemble and assemble final drive.	
							10. Disassemble and assemble planetary.	
							11. Disassemble and assemble differential.	
							12. Perform undercarriage component repair and alignment.	
							13. Replace and adjust wheel bearings.	
							14. Describe operation of hydroslatic drive systems.	
							15. Describe operation of differential steering.	
							Other:	

0	1	2	3	4	5	6	J. Diagnose and Repair Engine and Related Systems	Notes:
							1. Demonstrate safety procedures specific to engines.	
							2. Demonstrate knowledge of diesel engine theory and operation.	
							3. Identify engine accessories.	
							4. Identify engine subassemblies and systems.	
							5. Diagnose and troubleshoot engine long block components.	
							6. Diagnose and troubleshoot lube system components.	
							7. Diagnose and troubleshoot cooling system components.	
							8. Diagnose and troubleshoot air induction and exhaust system components.	
							9. Diagnose and troubleshoot engine accessory component.	
							10. Disassemble engine to subassemblies and reassemble.	
							11. Perform engine tune-up.	
							Other:	

0	1	2	3	4	5	6	K. Diagnose and Repair Mechanical/Electronic Fuel Systems	Notes:
							1. Test and/or replace injection nozzles and injectors.	
							2. Time fuel injection pump.	
							3. Identify and install fuel line hoses and connections.	
							4. Remove and install injection pump.	
							5. Identify, diagnose, and repair the electronic fuel system and related components.	
							6. Remove, inspect, test, and reinstall electronic injectors; determine needed repairs.	
							7. Identify and diagnose high and low pressure fuel systems.	
							8. Identify and describe operational differences between mechanical and electronic fuel systems (mechanical, electronic, and hydraulic actuation).	
							Other:	

0	1	2	3	4	5	6	L. Perform Basic Skills of Welding (optional)	Notes:
							1. Demonstrate safety procedures and precautions specific to welding.	
							2. Use cutting torch.	
							3. Weld with arc welder in flat position.	
							4. Braze fittings.	
							5. Braze light-gauge material in flat position.	
							6. Weld with gas welder in flat position.	
							Other:	

0	1	2	3	4	5	6	M. Demonstrate Leadership	Notes:
							1. Demonstrate understanding of Skills USA/VICA, its structure and activities.	
							2. Describe the effect of one's personal values on leadership.	
							3. Perform tasks related to effective personal management skills.	
							4. Demonstrate interpersonal skills.	
							5. Demonstrate effectiveness in oral and written communication.	
							6. Maintain code of professional ethics.	
							7. Maintain good professional appearance.	
							8. Perform basic tasks related to employment skills.	
							9. Perform basic parliamentary procedures in group meeting.	
							Other:	