NORTH MONTCO TECHNICAL CAREER CENTER
1265 SUMNEYTOWN PIKE, LANSDALE, PA 19446

Performance Evaluation/Assessment

Automotive Technology

NATEF Automatic Transmission & Transaxle

Standardized Integration Module (SIM)

Task 3: Off-Vehicle Transmission and Transaxle Repair
Hours: 42
Date: 9/01/2008

Exit Outcome/Terminal Performance Objective:

- Demonstrate the ability to perform necessary off-vehicle transmission/transaxle repairs.

Enabling Objectives:

- Explains basic off-vehicle transmission/transaxle maintenance and repairs.
- Identifies basic off-vehicle automatic transmission/transaxle assembly components.
- Explains/identifies off-vehicle automatic transmission/transaxle assembly components requiring maintenance and repairs.
- Performs basic off-vehicle automatic transmission/transaxle maintenance and repairs.
- Locate correct diagnostic, repair, service & maintenance information using ShopKey.

Mastery: All hands-on tasks must be completed to 100% accuracy and to industry standards. To achieve Mastery of this task, the student must:

1. Participate in a lecture, view either the PowerPoint presentation or video of the material.
2. Participate in a demonstration of the task.
3. Participate in a guided application of the task.
4. Practice the task without the instructor.
5. Complete task to 100% accuracy.
6. Demonstrate or practice the task with another student.

PA Academic Standards/Assessment Anchors/Eligible Content
Science
PA Academic Standard:
31.10.E Describe patterns of change in nature, physical and man made systems.
Assessment Anchor:
S11.A.1.1 Analyze and explain the nature of science in the search for understanding the natural world and its connection to technological systems
Eligible Content:
S11.A.1.1.4 Explain how specific scientific knowledge or technological design concepts solve practical problems

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Math

PA Academic Standard:

2.2.11.A Develop and use computation concepts, operations and procedures with real numbers in problem-solving situations.

2.2.11.B. Use estimation to solve problems for which an exact answer is not needed.

Assessment Anchor:

M11.A.2.1 Apply ratio and/or proportion in problem-solving situations.

M11.A.3.2 Use estimation strategies in problem-solving situations.

Eligible Content:

M11.A.2.1.1 Solve problems using operations with rational numbers including rates and percents (single and multi-step and multiple procedure operations) (e.g., distance, work and mixture problems, etc.).

M11.A.3.2.1 Use estimation to solve problems.

Language Arts

PA Academic Standard:

1.1.11.E Establish a reading vocabulary by identifying and correctly using new words acquired through the study of their relationships to other words.

1.1.11.F Understand the meaning of and apply key vocabulary across the various subject areas.

Assessment Anchor:

R11.A.1.1 Identify and apply the meaning of vocabulary.

R11.A.1.2 Identify and apply word recognition skills.

Eligible Content:

R11.A.1.1.1 Identify and/or apply meaning of multiple-meaning words used in text.

R11.A.1.1.2 Identify and/or apply a synonym or antonym of a word used in text.

R11.A.1.2.1 Identify how the meaning of a word is changed when an affix is added; identify the meaning of a word from the text with an affix.

R11.A.1.2.2 Define and/or apply how the meaning of words or phrases changes when using context clues given in explanatory sentences.

Social Studies

PA Academic Standard:

8.3.12.A Identify and evaluate the political and cultural contributions of individuals and groups to United States history from 1890 to Present.

Career Education & Work

PA Academic Standard:

13.4.11.B Analyze entrepreneurship as it relates to personal character traits.

SAFETY NOTICE: In addition to following all North Montco Technical Career Center Automotive Technology Program Safety and MSDS Policies, refer to the specific vehicle's manufacturer's shop manual for complete safety details when performing these tasks.

NOTE: ***Safety is not an option!*** Although this information is very thorough, it is general and does not fully cover all safety rules, procedures and hazards.

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PERFORMANCE CRITERIA	Needs Practice	Satisfactory
Safety glasses must be worn at all times! Read all safety materials provided and observe all safety precautions demonstrated by your instructor		
Remove and reinstall transmission/transaxle and torque converter; inspect engine core plugs, rear crankshaft seal, dowel pins, dowel pin holes, and mating surfaces. P-1		
Disassemble, clean, and inspect transmission/transaxle. P-1		
Inspect, measure, clean, and replace valve body (includes surfaces, bores, springs, valves, sleeves, retainers, brackets, checkvalves/balls, screens, spacers, and gaskets). P-2		
Inspect servo and accumulator bores, pistons, seals, pins, springs, and retainers; determine necessary action. P-2		
Assemble transmission/transaxle. P-1		
Inspect, leak test, and flush or replace transmission/transaxle oil cooler, lines, and fittings. P-1		
Inspect converter flex (drive) plate, converter attaching bolts, converter pilot, converter pump drive surfaces, converter end play, and crankshaft pilot bore. P-2		
Install and seat torque converter to engage drive/splines. P-1		
Inspect, measure, and reseal oil pump assembly and components. P-1		
Measure transmission/transaxle end play or preload; determine necessary action. P-1		
Inspect, measure, and replace thrust washers and bearings. P-2		
Inspect oil delivery circuits, including seal rings, ring grooves, and sealing surface areas, feed pipes, orifices, and check valves/balls. P-2		
Inspect bushings; determine necessary action. P-2		
Inspect and measure planetary gear assembly components; determine necessary action. P-2		
Inspect case bores, passages, bushings, vents, and mating surfaces; determine necessary action. P-2		
Inspect transaxle drive, link chains, sprockets, gears, bearings, and bushings; perform necessary action. P-2		
Inspect, measure, repair, adjust or replace transaxle final drive components. P-2		

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Inspect clutch drum, piston, check-balls, springs, retainers, seals, and friction and pressure plates; determine necessary action. P-2		
Measure clutch pack clearance; determine necessary action. P-1		
Air test operation of clutch and servo assemblies. P-1		
nspect roller and sprag clutch, races, rollers, sprags, springs, cages, and retainers; determine necessary action. P-1		
Inspect bands and drums; determine necessary action. P-2		
Describe the operational characteristics of a continuously variable transmission (CVT). P-3		
Describe the operational characteristics of a hybrid vehicle drive train. P-3		
Complete an Outline, Reading Grid, Summary and "Last-Word" Worksheet Packet for Chapters 1-10, 80, 57, 58, 63 and 64 from *Modern Automotive Technology*		
Score a 80% or better on *Modern Automotive Technology* chapter tests 1-10 & 80		
Score a 80% or better on *Modern Automotive Technology* chapter tests 57, 58, 63 and 64		
Score 80% or better on ASE Practice Test 4		
Score 80% or better on Math Intro Lessons 1-5 & Math Lessons 1, 2, 3, 5 and 6 Homework Sheets		

NOTES: