Specific Competencies and Skills Tested in this Assessment:

**Engine Repair**
Inspect and service general engine issues
Inspect, test, and service lubrication and cooling systems

**Automatic Transmission and Transaxle**
Check fluids on transmission/transaxle
Perform in-vehicle transmission/transaxle inspections and service
Describe and identify operational characteristics of transmission/transaxle for CVT and hybrids

**Manual Drive Train and Axles**
Check fluid condition and service transmissions and transaxles
Perform clutch master cylinder inspections and service
Inspect and service manual transmission and transaxle issues
Inspect and service drive shaft, half shafts, universal, and constant-velocity (CV) joints
Inspect and service four-wheel drive and all-wheel drive systems

**Suspension and Steering**
Perform related suspension and steering systems inspection and service
Perform vehicle pre-alignment inspection and ride-height
Inspect and service wheels and tires

**Brakes**
Inspect and service hydraulic system
Inspect and service drum brakes
Inspect and service disc brakes
Inspect and service power-assist units
Inspect and service miscellaneous systems (e.g., wheel bearings, parking brakes, electrical)
Identify and describe electronic brakes, traction, and stability control systems
Automotive Technician-Core - PILOT (continued)

**Electrical and Electronic Systems**
Inspect and service general electrical/electronic systems
Inspect and service batteries
Inspect and service starting systems
Inspect and service charging systems
Inspect and service lighting systems
Inspect and service accessories

**Heating and Air Conditioning**
Inspect and service refrigeration system components
Inspect and service heating, ventilation, and engine cooling systems
Inspect and service operating systems and related controls

**Engine Performance**
Inspect and service general engine performance
Identify and describe electronic engine controls
Inspect and service fuel, air induction, and exhaust systems
Inspect and service emissions control systems

**Customer Relations and Shop Procedures**
Interpret and estimate repair and work orders
Utilize vehicle service information
Exhibit understanding of appropriate customer interactions
Exhibit understanding of automotive, environmental, and hazardous materials
Display understanding of safe work environment, shop procedures, and proper handling of customer vehicle
**Automotive Technician-Core - PILOT (continued)**

**Written Assessment:**

Administration Time: 3 hours  
Number of Questions: 176  

**Areas Covered:**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Area</th>
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<tbody>
<tr>
<td>6%</td>
<td>Engine Repair</td>
</tr>
<tr>
<td>5%</td>
<td>Automatic Transmission and Transaxle</td>
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<tr>
<td>10%</td>
<td>Manual Drive Train and Axles</td>
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<tr>
<td>14%</td>
<td>Suspension and Steering</td>
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<tr>
<td>14%</td>
<td>Brakes</td>
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<tr>
<td>15%</td>
<td>Electrical and Electronic Systems</td>
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<td>Engine Performance</td>
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<tr>
<td>14%</td>
<td>Customer Relations and Shop Procedures</td>
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**Sample Questions:**

When replacing the timing belt on a dual overhead cam engine, the technician needs to  
A. remove the engine  
B. lock the cams in place  
C. replace the dual cam  
D. re-torque the head bolts

To check fluid level on an automatic transmission equipped with a fluid level sensor instead of a dipstick, use a/an  
A. inspection sight glass  
B. pressure flow chart  
C. approved flush machine  
D. scan tool

Inspection of a hydraulic clutch system for leaks should include the  
A. throw-out bearing adjustment  
B. clutch master cylinder  
C. clutch pedal free travel  
D. automatic adjuster

A parallelogram steering linkage utilizes the pitman and idler arms to support the  
A. strut rods  
B. steering coupler  
C. center link  
D. track bar

For lateral runout, a technician should use a  
A. tape measure  
B. micrometer  
C. dial indicator  
D. linear caliper
A side load condition on a wheel bearing occurs when the vehicle is
A. cornering
B. in reverse
C. stationary
D. moving

Terminal voltage for a fully charged battery is
A. 12.0 volts
B. 12.2 volts
C. 12.4 volts
D. 12.6 volts

A gurgling sound from the dash in the area of the heater core could indicate
A. high coolant flow
B. high coolant temperature
C. low coolant temperature
D. low coolant level

Low compression in two adjacent cylinders is usually caused by a
A. cracked head
B. cracked or broken ring
C. damaged head gasket
D. burnt valve

Greasy or oily rags should be stored in a/an
A. specified area of the shop
B. approved covered metal container
C. outside container
D. marked storage shelf
**Performance Assessment:**

Administration Time: 2 hours and 40 minutes  
Number of Jobs: 6

**Areas Covered:**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Area Description</th>
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| 5%         | **Identification of Parts**  
Participant will identify each part displayed on workbench and write the name beside the corresponding number. |
| 27%        | **Brakes: Disc Brake Assembly Service**  
Participant will measure and record lateral runout and rotor thickness, remove brake pads, set up lathe and cut, replace brake pads, record caliper mounting bolt torque specifications, remount caliper and torque caliper, and return vehicle to pre-job status. |
| 22%        | **Electrical/Electronic Systems: Test and Diagnose Battery, Starting, and Charging System**  
Participant will perform a source voltage test, battery load test, ground circuit voltage drop test, alternator output test, and record recommendations. Steps will require the participant to look up and record specifications throughout the diagnosis. |
| 11%        | **Engine Performance: Test Electronic Engine Control Component**  
Participant will identify trouble codes and give descriptions, use service information to identify and locate components related to trouble codes, inform evaluator of findings, and will leave codes when finished. |
| 15%        | **Suspension and Steering: Tire Service and Balance**  
Participant will demonstrate the ability to dismount a tire from a wheel and mount a replacement tire on the wheel while correctly positioning the TPMS sensor. Steps will include inflating the tire to 28 psi maximum inflation, balancing the tire and wheel assembly, and following safety standards. |
Automotive Technician-Core - PILOT (continued)

20%  **Headlight Amperage Draw Test**
Participant will find the fuse that controls low beam, measure and record source voltage, measure and record amperage, calculate and record the resistance, recommend required amperage fuse, notify evaluator, and reset the DVOM and remove the leads.

**Sample Job:** Suspension and Steering: Tire Service and Balance

**Maximum Job Time:** 20 minutes

**Participant Activity:** The participant will demonstrate the ability to dismount a tire from a wheel while positioning TPMS sensor, mount a replacement tire on the wheel while correctly positioning the TPMS sensor, inflate the tire to 28 psi, balance tire and wheel assembly, and notify the evaluator for inspection.