Nocti Business Solutions®
Your Corporate Assessment Provider
www.noctibusiness.com

Experienced Worker Assessment Blueprint

Automotive Technician (Auto Mechanics)

Test Code: 0303 / Version: 01

Specific Competencies and Skills Tested in this Assessment:

Record Keeping/Customer Relations

- Complete work order
- Maintain preventive maintenance sheets (fleet and customer)
- Maintain shop equipment
- Add technical comments to RO
- Time startup RO's
- Time startup job tickets

Preventive Maintenance

- Raise and lower vehicle with the lift
- Perform underside inspections
- Inspect fluid levels (brake, differential, power steering, coolant, windshield, transaxle, transmission)
- Test coolant protection level
- Lubricate chassis
- Change oil filter
- Change fuel filter
- Perform underhood inspection
- Clean and service battery
- Lubricate hardware
- Check front and rear wheel bearings for looseness
- Test lighting circuits
- Check windshield washers
- Inspect and diagnose for abnormal tire wear
- Tire service

HVAC System Diagnosis and Repair

- Identify system components and operation
- Diagnose by using manufacturer's service procedures
- Remove/replace heater core
- Test or replace blower motor
- Diagnose A/C refrigerant systems
- Check for leak using electronic leak detector, dye leak, black light
- Check functional controls
- Recovery and recycle A/C refrigerants
- Service air conditioning clutch assembly
- Replace refrigerant seals
- Diagnose and repair electronic controls
- Evacuate and recharge A/C system

Specific Competencies and Skills continued:

Emission System Diagnosis and Repair

- Identify system components and operation
- Diagnose catalytic converter
- Diagnose and repair crankcase emission systems
- Diagnose and repair air induction system
- Diagnose and repair spark timing control
- Diagnose and repair evaporative emission system
- Diagnose and repair exhaust gas control system
- Diagnose and repair heated air system
- Read and follow manufacturer's diagram charts and diagnostic routines

Steering and Suspension System Diagnosis and Repair

- Road test vehicle and diagnose problems
- Inspect and/or replace shock absorber or MacPherson struts
- Inspect and replace suspension and steering components
- Inspect and interpret tire wear
- Inspect and align rear end, if applicable
- Inspect and align front end
- Diagnose and repair hydraulic steering system
- Diagnose and replace electronic suspension system
- Diagnose and repair electronic steering assist

Automatic Transmission Diagnosis and Repair

- Identify system components and operation
- Service automatic transmissions/trans axle
- Perform diagnostic tests recommended by manufacturer
- Diagnose and test electronic controls - transmission/trans axle
- Diagnose and overhaul automatic transmission/trans axle
- Read and follow manufacturer's charts and diagnostic routine

Manual Transmission and Driveline Diagnosis and Repair

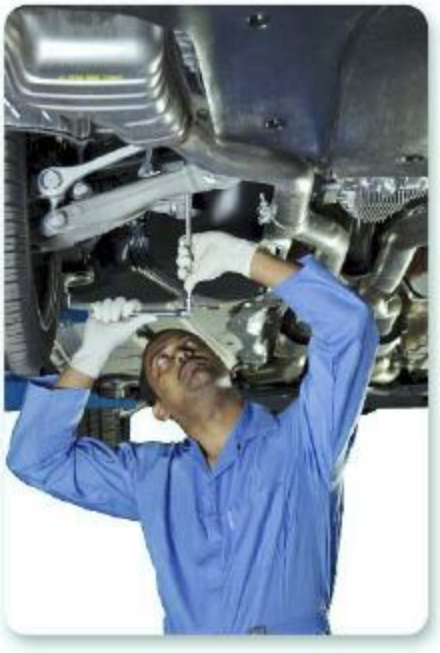
- Diagnose and repair drive axle
- Diagnose and repair manual transmission/trans axle
- Diagnose and repair clutch system
- Diagnose and repair transmission for case
- Diagnose and repair propeller shaft
- Diagnose and repair CV joints and shaft
- Diagnose and repair electronic control driveline
- Read and follow manufacturer's charts and diagnostic routine

Specific Competencies and Skills continued:

Braking and Traction Control System Diagnosis and Repair

- Identify system components and operation
- Road test vehicle and identify brake concerns
- Diagnose and repair hydraulic brake systems
- Diagnose and repair friction material and components
- Diagnose and repair manual brakes system
- Diagnose and repair ABS and traction control system
- Read and follow manufacturer's charts and diagnostic routines

Engine Performance Diagnosis and Repair



- Identify system components and operations
- Diagnose and repair fuel injection system
- Diagnose and repair fuel delivery systems
- Diagnose and repair engine vacuum systems
- Diagnose and repair combustion system
- Diagnose and repair ignition system
- Read and follow manufacturer's charts and diagnostic routines
- Diagnose and repair electronic engine controls

Electrical System Diagnosis and Repair

- Circuit protection devices
- Test and repair lighting circuits
- Test and repair windshield wiper circuit
- Diagnose and repair electronic accessories to include power seat, windows, locks
- Diagnose and repair gauge circuit operation
- Read and follow electrical schematics
- Read and follow manufacturer's charts and diagnostic routines

Engine Diagnosis and Repair

- Identify system components and operation
- Diagnose and repair engine noise
- Perform and interpret base engine test to include pressure, compress, leakages, vacuum, cooling
- Perform visual inspection and critical dimension check
- Perform engine overhaul using manufacturer's procedures
- Replace timing belt

Specific Competencies and Skills continued:

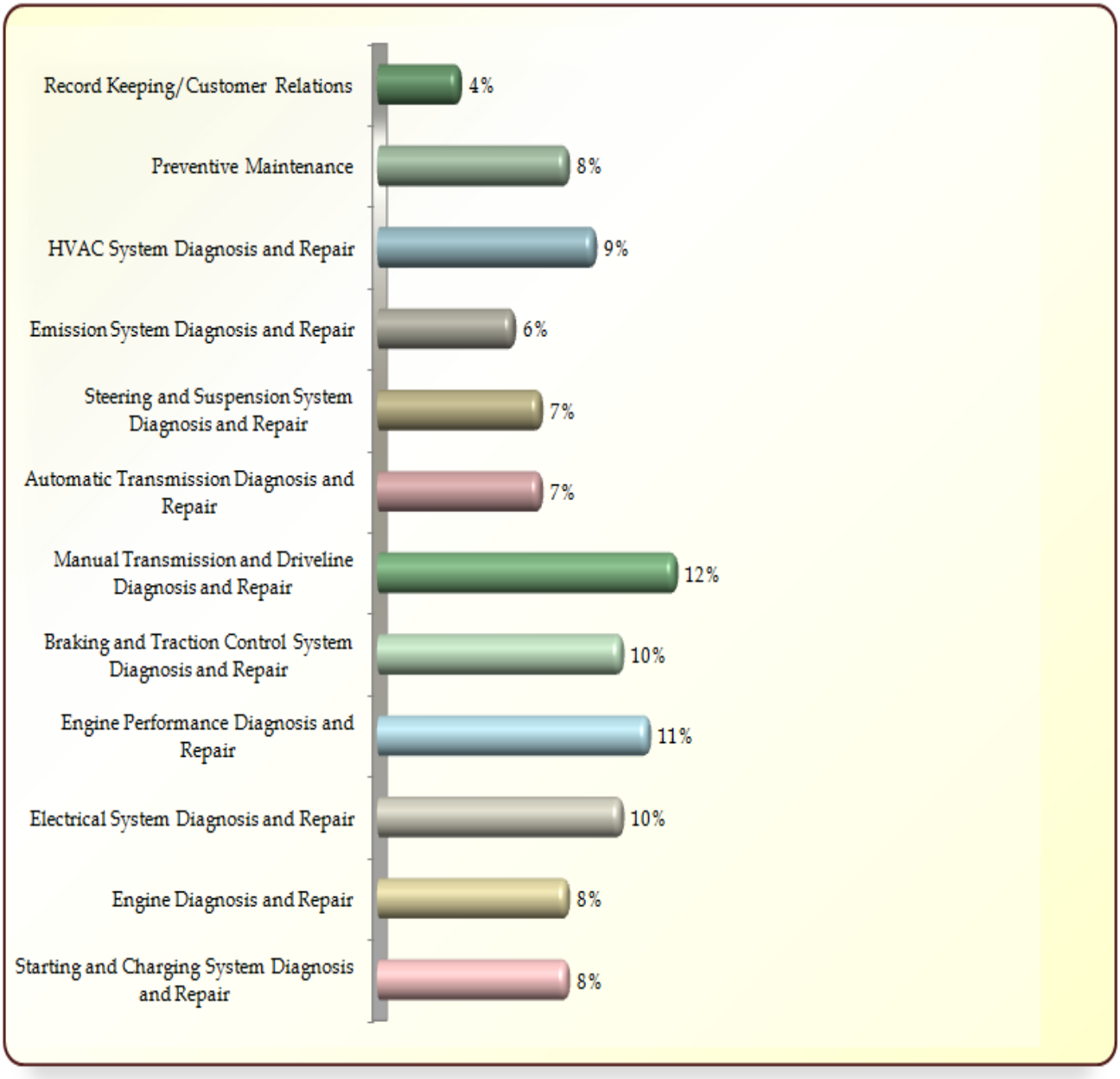
Starting and Charging System Diagnosis and Repair

- Identify system components and operations
- Diagnose and repair charging system
- Diagnose and repair starting system
- Diagnose and service battery
- Read and follow manufacturer's charts and diagnostic routines

Written Assessment:

Administration Time: 3 hours
Number of Questions: 198

Areas Covered:



Sample Questions:

A 50-50 mixture of ethylene glycol and water in the cooling system

A. raises the boiling point
B. lowers the freezing point
C. requires changing at specified intervals
D. all of the above

When using dye leak detector for diagnosis of a refrigerant leak, the dye should be introduced to the system at

A. the low side of the system
B. the high side of the system
C. either the high side or low side of the system
D. the refrigerant bottle of the charging stations

A badly worn idler arm may cause which of the following to change?

A. caster
B. camber
C. toe-in
D. all of the above

With a full-floating rear axle shaft, the weight of the vehicle is carried by the

A. housing
B. axle shaft
C. axle and housing
D. backing plate

After a wet/dry compression test, the compression reading on one engine cylinder reads 85 PSI dry and 120 PSI wet. This usually indicates

A. a leaking head gasket
B. worn-out piston rings
C. worn valve guides
D. burned valves

Performance Assessment:

Administration Time: 4 hours and 45 minutes
Number of Jobs: 12

Areas Covered:

9% **Identification of Parts**
Identify engine parts, brake parts, fuel system parts, air conditioning parts and emission parts.

4% **Windshield Washer Circuit Inoperative**
Verify complaint, select proper test equipment and manual, test washer circuit following service manual procedures, and use service manual to identify problem and explain problem.

10% **Disc Brake Assembly Service and Wheel Bearing Adjustment**
Install seal, install boot, assemble caliper, install brake pads, torque caliper to spindle bolts, adjust wheel bearings, record proper rotor runout, record rotor thickness specs, rotor measurement, record caliper to spindle and wheel bearing specs, machine brake rotor, observe safety procedures, use proper tools and equipment.

9% **Perform Four-Wheel Alignment**
Check all tires for air pressure and tire quality, identify and check front end components for wear, hang front heads, compensate at least two or more heads, and set up machine, make camber/caster swing and check total toe for front and rear, explain adjustment procedure, what needs to be adjusted on vehicle, what adjustments are made first and last, and be able to give specs from manufacturer.

9% **Diagnose Engine Drivability Problems**
Hook up oscilloscope, interpret secondary scope pattern, hook up timing light and interpret timing light results.

6% **Perform Fuel System Pressure Test**
Connect fuel pressure tester, check for fuel pressure drop, check fuel pressure regulator and disconnect equipment.

6% **Diagnose and Test Charging System**
Connect test equipment, determine alternator output in amps, determine alternator output in volts, perform insulated circuit voltage drop test, and observe safety procedures.

13% **Test Battery and Starter**
Perform starter draw test, perform battery load test, perform ground voltage drop test and record requested data.

Performance Assessment continued:

7% **Test Electronic Engine Control Component**

Hook up scan tool, retrieve trouble codes and interpret scan codes, monitor four sensors and determine signal of required components, and compare scan tool results to manufacturer's specifications.

9% **Automatic Transmission/Transaxle**

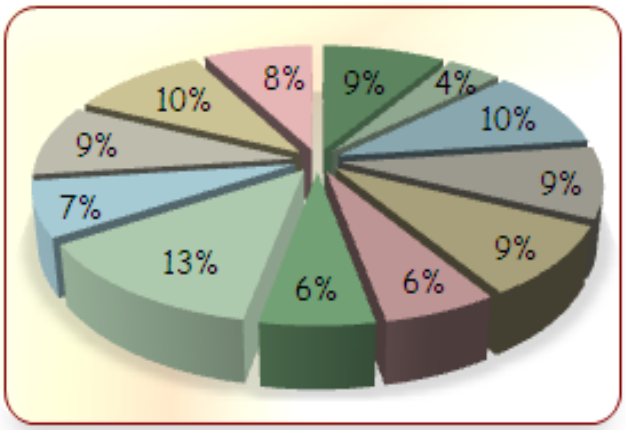
Disassemble clutch housing, identify and inspect components, reassemble clutch housing, measure and evaluate clutch pack clearance, and perform air test and evaluate condition of overhauled unit.

10% **Service and Adjust Final Drive Assembly**

Determine backlash readings, measure pinion preload turning torque, create and identify contact pattern on drive and coast sides of ring teeth, and explain ring and pinion adjustments.

8% **Diagnose and Service Automotive Air Conditioning System**

Connect gauges, identify the degree of low state of charge, perform leak test of the system with leak detector.



Sample Job: Windshield Washer Circuit Inoperative

Estimated Job Time: 20 minutes

Participant Activity: The participant will diagnose windshield washer problem using proper procedures and equipment provided to determine repair. Participant will then explain the problem and corrective repair to the evaluator.