Measuring What Matters in CTE®

Teacher Assessment Blueprint

Automotive Technician

Test Code: 5262 / Version: 01

General Assessment Information

Blueprint Contents

Test Type: The Automotive Technician assessment is included in NOCTI's Teacher assessment battery. Teacher assessments measure an individual's technical knowledge and skills in a proctored proficiency examination format. These assessments are used in a large number of states as part of the teacher licensing and/or certification process, assessing competency in all aspects of a particular industry. NOCTI Teacher tests typically offer both a written and performance component that must be administered at a NOCTI-approved Area Test Center. Teacher assessments can be delivered in an online or paper/pencil format.

Revision Team: The assessment content is based on input from subject matter experts representing the following states: Connecticut, Kentucky, Michigan, North Carolina, Pennsylvania, and West Virginia.

CIP Code

47.0604- Automobile/Automotive Mechanics Technology/Technician

Learning that works for America CTE™

Career Cluster 16- Transportation, Distribution, and Logistics

O*net™ in*it

49-3023.01- Automotive Master Mechanics

NATIONAL COLLEGE CREDIT RECOMMENDATION SERVICE
University of the State of New York - Regents Research Fund

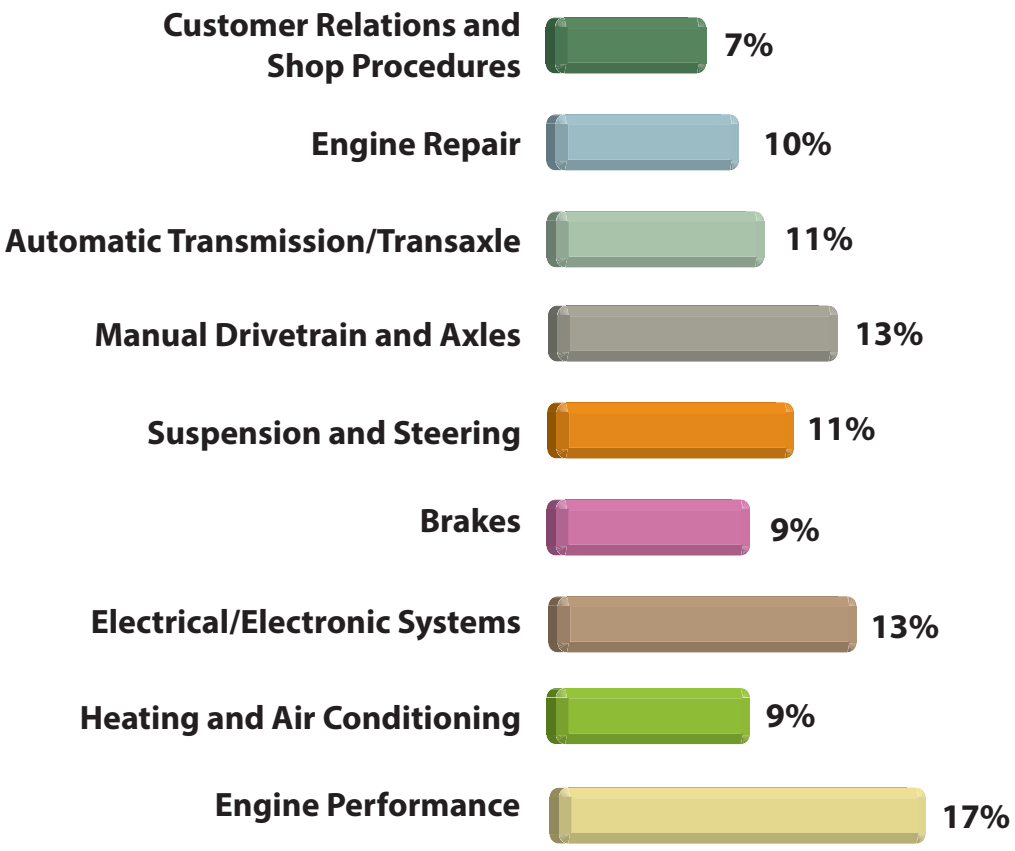
In the lower division baccalaureate/associate degree category, 1 semester hour in Automotive Trades or Automotive Technician

Written Assessment

NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

Administration Time: 3 hours
Number of Questions: 190
Number of Sessions: This assessment may be administered in one, two, or three sessions.

Areas Covered



Specific Standards and Competencies Included in this Assessment

Customer Relations and Shop Procedures

- Interpret repair and work orders
- Exhibit understanding of appropriate customer interactions
- Exhibit understanding of environmental requirements
- Display understanding of safe working environment and shop procedures

Engine Repair

- Perform engine service and diagnosis
- Perform cylinder head and valve train diagnosis and repair
- Perform engine block assembly diagnosis and repair
- Perform lubrication and cooling systems diagnosis and repair
- Perform exhaust inspection and service
- Perform mechanical timing and front-end service

Automatic Transmission/Transaxle

- Diagnose general transmission/transaxle concerns
- Maintain and adjust transmission/transaxle
- Perform in-vehicle transmission/transaxle service
- Perform off-vehicle transmission/transaxle service
- Diagnose transmission/transaxle electronic issues

Manual Drivetrain and Axles

- Diagnose general drivetrain concerns
- Diagnose and repair manual transmission/transaxle issues
- Perform in-vehicle manual transmission/transaxle service
- Perform off-vehicle manual transmission/transaxle service
- Diagnose and repair four-wheel drive/all-wheel drive components
- Diagnose and repair general axle concerns

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Specific Standards and Competencies (continued)

Suspension and Steering

- Diagnose, service, and repair steering systems
- Diagnose, service, and repair suspension systems
- Perform wheel alignment diagnosis, adjustment, and repair
- Diagnose, service, and repair wheels and tires

Brakes

- Diagnose and repair hydraulic systems
- Diagnose and repair drum brakes
- Diagnose and repair disc brakes
- Diagnose and repair power assist systems
- Diagnose and repair parking brake systems
- Diagnose and repair ABS (antilock brake systems) and TCS (traction control systems)

Electrical/Electronic Systems

- Perform electrical/electronic system diagnosis
- Perform battery diagnosis and service
- Diagnose and repair starting systems
- Diagnose and repair charging systems
- Diagnose and repair lighting systems
- Diagnose and repair accessory devices and systems

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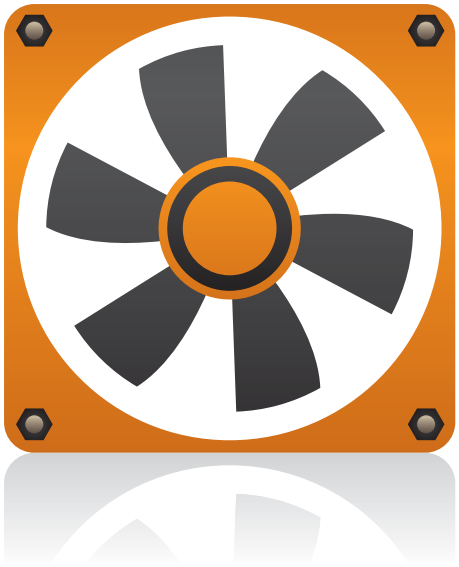
Specific Standards and Competencies (continued)

Heating and Air Conditioning

- Perform service and maintenance on heating and AC (air conditioning) systems
- Diagnose and repair AC system components
- Diagnose and repair heating systems
- Diagnose and repair heating and AC control systems
- Demonstrate knowledge of refrigerant recovery, recycling, and handling

Engine Performance

- Diagnose general engine drivability concerns
- Diagnose ignition systems
- Diagnose and repair fuel and air induction systems
- Diagnose and repair exhaust and emissions control systems
- Diagnose and repair computerized engine control systems
- Determine proper procedures for diagnosing intermittent issues



Sample Questions

A technician notices black smoke from a vehicle's exhaust while performing an unrelated repair. The technician should recommend

A. different gasoline
B. an oil pressure test
C. emissions testing
D. a muffler replacement

One procedure used to determine if a transmission or torque converter is slipping is called a _____ test.

A. pressure
B. leak
C. vacuum
D. stall

If a front wheel has radial (side-to-side) movement but the ball joint passes inspection, what would be the most likely cause?

A. worn idler arm
B. faulty tie rod end
C. loose wheel bearings
D. faulty pitman arm

The most common refrigerant installed in new vehicles is

A. R-12
B. R-22
C. R-66
D. R-134a

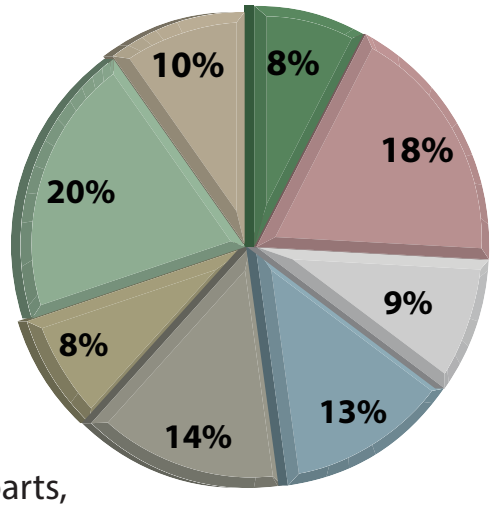
A normal idle air/fuel mixture would be

A. 12.6:1
B. 14.7:1
C. 18.5:1
D. 20.4:1

Performance Assessment

NOCTI performance assessments allow individuals to demonstrate their acquired skills by completing actual jobs using the tools, materials, machines, and equipment related to the technical area.

Administration Time: 3 hours and 10 minutes
Number of Jobs: 8



Areas Covered:

8% Identification of Parts
Identify engine parts, automatic transmission/transaxle parts, manual drive train and axle parts, suspension, steering and brake parts, electrical and electronic parts, heating and air conditioning parts, engine performance parts, and timeliness of job.

18% Disc Brake Assembly
Remove caliper mounting bolts, replace brake pads, record caliper mounting bolt torque specs, remount and torque caliper, measure and record rotor thickness, determine usability of rotor, and timeliness of job.

9% Tire Service and Balance
Dismount the tire from the wheel, mount replacement tire on wheel, inflate tire, balance tire and wheel assembly, and timeliness of job.

13% Cylinder Head Service
Cylinder head – look up and record max allowable clearance, measure cylinder head surface straightness, record measurements, determine cylinder head condition. Cylinder head valve – look up and record valve stem diameter specs, measure exhaust valve stem, record actual measurements, determine cylinder head valve condition, and timeliness of job.

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Areas Covered (continued)

14% Perform Fuel System Pressure Test
Look up and record fuel pressure specs, install fuel pressure tester, power up fuel pump – inspect for leaks, record fuel pressure, start engine, observe record regulated pressure, compare regulated fuel pressure to specs, manually test fuel pressure regulator, perform a leak down test, drain and disconnect test equipment, and timeliness of job.

8% Windshield Washer Circuit Inoperative
Diagnosis of windshield washer system fault, determine necessary repairs, follow written instructions, and timeliness of job.

20% Test and Diagnose Battery, Starting, and Charging System
Perform open circuit voltage test, look up and record battery load test specs, perform and record battery capacity test, look up and record starter draw specs, perform and record starter draw test, ground circuit voltage drop test, manufacturer's alternator output specs, alternator test and recommendations, and timeliness of job.

10% Test Electronic Engine Control Component
Retrieve and document numerical trouble codes, use service manual to identify trouble code(s) set, identify and locate trouble code components, do not clear codes or repair, and timeliness of job.

Sample Job

Tire and Service Balance

Maximum Time: 20 minutes

Participant Activity: The participant will adhere to all safety procedures. Participant will dismount the tire from the wheel, mount replacement tire on the wheel, inflate the tire to 28 psi, balance the tire and wheel assembly, and notify the evaluator for inspection.