

Teacher Assessment Blueprint

Diesel Technology



Test Code: 5270 / Version: 01

General Assessment Information

Blueprint Contents

General Assessment Information	Sample Written Items
Written Assessment Information	Performance Assessment Information
Specific Competencies Covered in the Test	Sample Performance Job

Test Type: The Diesel Technology 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: North Dakota, Pennsylvania, Texas, and Virginia.



47.0613- Medium/Heavy Vehicle and
Truck Technology/Technician



Career Cluster 16-
Transportation, Distribution,
and Logistics



49-3031.00-
Bus and Truck Mechanics
and Diesel Engine Specialists

Written Assessment

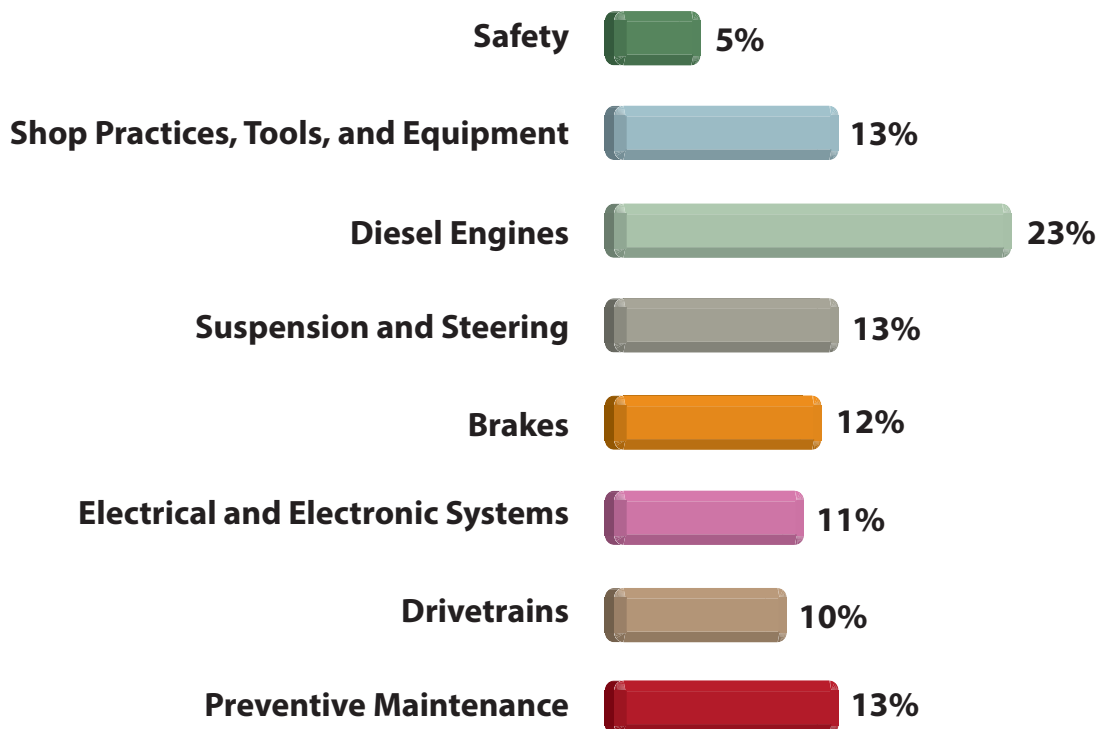
NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

Administration Time: 3 hours

Number of Questions: 172

Number of Sessions: This assessment may be administered in one, two, or three sessions.

Areas Covered



Specific Standards and Competencies Included in this Assessment

Safety

- Demonstrate understanding of fire safety
- Demonstrate understanding of personal, environmental, and equipment safety

Shop Practices, Tools, and Equipment

- Perform precision measuring (e.g., micrometers, torque meters)
- Exhibit familiarity with basic fabrication techniques
- Identify and select lines and fittings (e.g., SAE flare, pipe, hoses, tubing)
- Identify, select, and use hand tools
- Identify, select, and use basic shop equipment
- Identify and select proper fasteners

Diesel Engines

- Display knowledge of diesel technology terminology
- Display knowledge of diesel engine operation
- Display understanding of exhaust and induction systems, including exhaust management systems
- Identify components and functions of cooling systems
- Display understanding of engine electronics and multiplexing
- Identify components and functions of lubricating systems
- Identify components and functions of fuel systems
- Display knowledge of diesel engine disassembly
- Display knowledge of diesel engine assembly



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Specific Standards and Competencies (continued)

Suspension and Steering

- Identify, maintain, and repair tires, rims, and wheels
- Identify and repair chassis components
- Identify, maintain, and repair power steering systems
- Identify, maintain, and repair steering axle components
- Identify, maintain, and repair suspension types (i.e., front, rear)
- Maintain proper vehicle alignment

Brakes

- Identify, inspect, and repair hydraulic foundation brake system components and functions
- Identify and inspect ABS, ATC, and VSS
- Identify, inspect, and repair air foundation brake system components and functions
- Identify and inspect supply system components
- Identify, inspect, and repair air system components

Electrical and Electronic Systems

- Apply understanding of basic electrical principles
- Apply understanding of electrical schematics
- Service and inspect batteries
- Diagnose and repair starting systems
- Diagnose and repair lighting systems
- Diagnose and repair charging systems



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Specific Standards and Competencies (continued)

Drivetrains

- Inspect and adjust the clutch
- Diagnose and repair transmissions (i.e., manual, automatic, hybrids)
- Interpret drive line angles and perform failure analysis on U-joints
- Install and replace U-joints
- Diagnose and display understanding of differentials functionality, including interaxles

Preventive Maintenance

- Perform troubleshooting and preventive maintenance on engine systems
- Perform troubleshooting and preventive maintenance on transmissions (i.e., manual, automatic, hybrids)
- Perform troubleshooting and preventive maintenance on cooling and lubrication systems
- Perform troubleshooting and preventive maintenance on brake systems
- Perform troubleshooting and preventive maintenance on frame and chassis
- Perform troubleshooting and preventive maintenance on clutch and drivetrain



Sample Questions

Use of a brass hammer can prevent

- A. oxidation
- B. sparks
- C. fluxation
- D. rust

Use a _____ to measure the wear of an engine cylinder.

- A. small-bore gauge
- B. dial-bore gauge
- C. depth micrometer
- D. vernier caliper

A _____ is a sequence of events in an engine.

- A. stroke
- B. cycle
- C. degree
- D. firing order

The sealing lip on a wheel seal must face

- A. the fluid to be confined
- B. away from the fluid
- C. away from the shaft splines
- D. toward the shaft splines

Electric current is measured in

- A. amps
- B. volts
- C. ohms
- D. watts

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: 2 hours and 30 minutes

Number of Jobs: 5

Areas Covered:

18% Cylinder Liner Installation

Participant will follow procedures for installation of a cylinder liner.

25% Perform a Wheel Bearing Adjustment and Brake Stroke Measurement

Participant will adjust wheel bearings according to Technical and Maintenance Council guidelines and apply brake stroke measurement.

15% Check and Adjust Rocker Lever Clearance

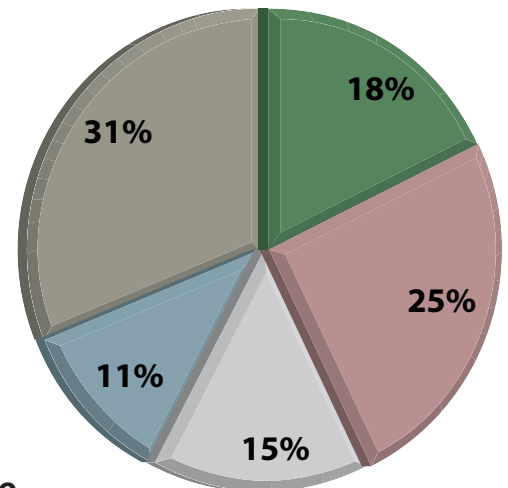
Participant will check and adjust rocker lever clearance in the engine provided.

11% Perform a Coolant System Inspection

Participant will pressure test an engine cooling system and record findings.

31% Electrical Testing

Participant will perform a battery discharge test, starter draw test, and alternator output test using the appropriate test meters.



Sample Job

Perform a Coolant System Inspection

Maximum Time: 30 minutes

Participant Activity: The participant will pressure test the engine cooling system, record the test pressure, pressure test the pressure cap and serviceability, record maximum pressure, perform SCA test on coolant sample, and determine the freeze point of the sample.

