



Diesel Technology

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: Florida, Michigan, New Jersey, Pennsylvania, Texas.



47.0613- Medium/Heavy Vehicle and
Truck Technology/Technician



Career Cluster -
Transportation, Distribution,
and Logistics



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

Written Assessment

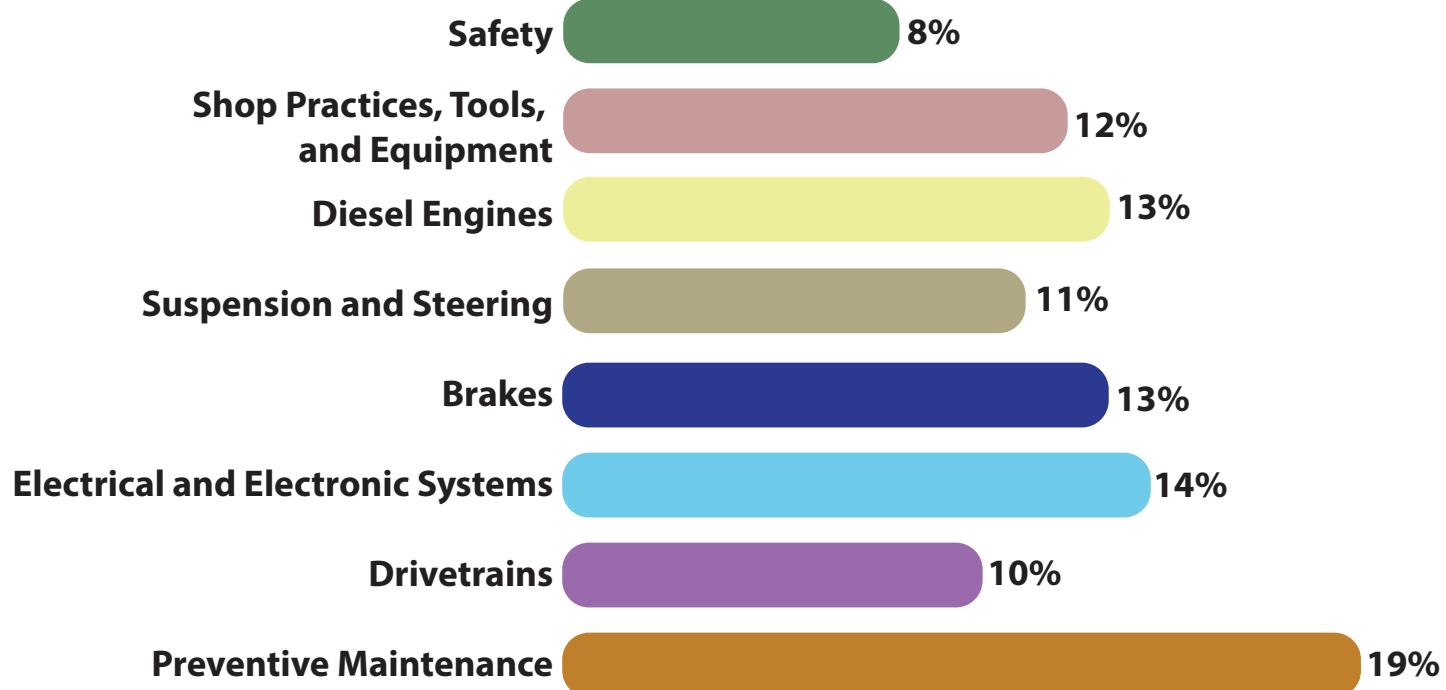
NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

Administration Time: 3 hours

Number of Questions: 179

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)
- Identify and select lines and fittings
- Identify, select, and use hand tools
- Identify, select, and use basic shop equipment
- Identify and select proper fasteners
- Access technical information

Diesel Engines

- Display knowledge of diesel technology terminology
- Display understanding of exhaust and induction systems
- Identify components and functions of cooling systems
- Display understanding of engine electronics
- Identify components and functions of lubricating systems
- Identify components and functions of fuel systems
- Display knowledge of diesel engine component parts and diesel engine operation



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Specific Standards and Competencies (continued)

Suspension and Steering

- Identify, maintain, and inspect TPMS 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 (e.g., 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
- Demonstrate knowledge 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

- Demonstrate understanding of the types of clutches
- Demonstrate understanding of transmissions (e.g., manual, automatic)
- Install and replace U-joints, and interpret drive line angles
- 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 (e.g., manual, automatic)
- Perform troubleshooting and preventive maintenance on cooling systems
- Perform troubleshooting and preventive maintenance on brake systems
- Perform troubleshooting and preventive maintenance on frame and chassis
- Perform troubleshooting and preventive maintenance on HVAC systems
- Perform troubleshooting and preventive maintenance through inspection of tire wear patterns
- Perform troubleshooting and preventive maintenance on clutches



Sample Questions

To avoid burns, use caution when opening the

- A. radiator cap
- B. gas cap
- C. brake fluid reservoir
- D. washer reservoir

A torque angle meter is used to properly tighten the bolts of a/an

- A. cylinder head
- B. motor mount
- C. valve cover
- D. oil pan

In oil coolers, the hot oil transfers its heat

- A. directly to the coolant
- B. to stabilize coolant temperature
- C. only in very hot climates
- D. under heavy load conditions

The downward bend of a frame is known as

- A. bow
- B. diamond
- C. sideways
- D. sag

The purpose of the ABS sensor is to

- A. measure air temperature
- B. measure brake temperature
- C. create AC pulses
- D. create DC pulses

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Sample Questions (continued)

A conventional battery might require adding distilled water because of evaporation or

- A. overcharging
- B. high RPM
- C. low amperage
- D. excessive idling

When the ignition switch on a given vehicle is turned to the start position a technician hears a clicking noise and the engine does not turn over. What is the most likely cause?

- A. The solenoid is faulty.
- B. There is a mechanical problem.
- C. The battery voltage is low.
- D. The starter is defective.

When replacing a heavy-duty clutch

- A. pre-lube the friction material before installation
- B. replace the clutch disc(s), pressure plate, and pilot bearing
- C. reuse the clutch brake
- D. grease the old bearings

The oil level in a manual gear transmission is considered full when it is

- A. level with the breather hole
- B. showing full on the pressure gauge
- C. no longer running from the drain plug
- D. even with the bottom of the fill hole

The two C-shaped longitudinal components of a truck frame are called the

- A. crossmembers
- B. torque arms
- C. reinforcement plates
- D. rails

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.

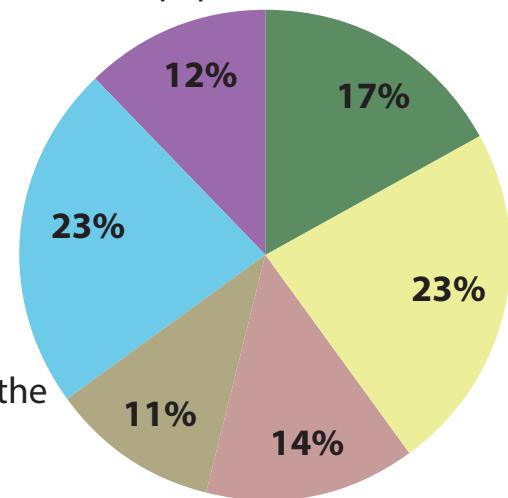
Administration Time: 2 hours and 45 minutes

Number of Jobs: 6

Areas Covered:

17% Cylinder Liner Installation

Participant will follow procedures for measurements for the installation of a cylinder liner and record results.



23% Perform a Wheel Bearing Adjustment and Brake Stroke Measurement

Participant will adjust wheel bearings according to Technical and Maintenance Council guidelines, and measure and record brake stroke.

14% 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, test a coolant sample, and record findings.

23% Electrical Testing

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

12% Electrical Testing

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 leave codes when finished.

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.

