

Job Ready Assessment Blueprint

Diesel Technology



Test Code: 4127 / Version: 01

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General Assessment Information

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Test Type: The Diesel Technology industry-based credential is included in NOCTI's Job Ready assessment battery. Job Ready assessments measure technical skills at the occupational level and include items which gauge factual and theoretical knowledge. Job Ready assessments typically offer both a written and performance component and can be used at the secondary and post-secondary levels. Job Ready assessments can be delivered in an online or paper/pencil format.

Revision Team: The assessment content is based on input from secondary, post-secondary, and business/industry representatives from the states of North Dakota, Pennsylvania, Texas, and Virginia.



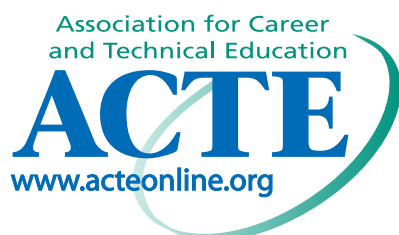
47.0613-
Medium/Heavy Vehicle and
Truck Technology/Technician



Career Cluster 16 -
Transportation, Distribution,
and Logistics



49-3031.00
Bus and Truck Mechanics
and Diesel Engine Specialists



The Association for Career and Technical Education (ACTE), the leading professional organization for career and technical educators, commends all students who participate in career and technical education programs and choose to validate their educational attainment through rigorous technical assessments. In taking this assessment you demonstrate to your school, your parents and guardians, your future employers and yourself that you understand the concepts and knowledge needed to succeed in the workplace. Good Luck!



The National Institute for Automotive Service Excellence (ASE) is the most-widely recognized professional journeyman credential in the automotive service industry, validating technician knowledge against established industry standards. ASE applauds all students successfully completing Career and Technical Education programs in the Transportation and Logistics cluster and their willingness to demonstrate their knowledge through third party assessments developed by industry experts. ASE believes this is the first step in a process which will define a technician's skill level throughout their career.

Written Assessment

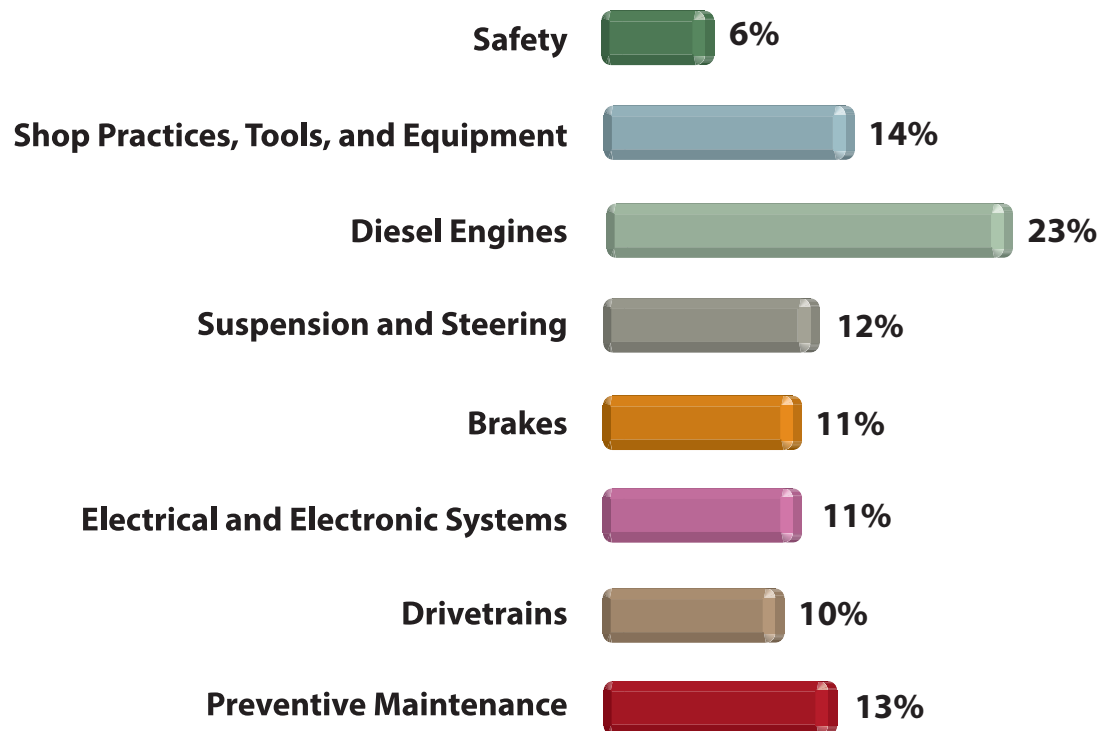
NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

Administration Time: 3 hours

Number of Questions: 178

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

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

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Specific Standards and Competencies (continued)

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



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

Motion is a form of _____ energy.

- A. kinetic
- B. thrust
- C. electrical
- D. nuclear

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

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Sample Questions (continued)

On a truck equipped with air brakes, the air governor should cut out between

- A. 60 to 70 psi
- B. 90 to 110 psi
- C. 100 to 115 psi
- D. 120 to 130 psi

Another name for the interaxle differential unit is the

- A. hypoid gear-set
- B. spinout preventer
- C. power divider
- D. splitter gears

Check cooling system supplemental coolant additives (SCA) level

- A. monthly
- B. with every other oil change
- C. once a year
- D. at every service interval

Use Plastigage® to check

- A. crankshaft radial runout
- B. journal diameter
- C. bearing oil clearance
- D. connecting rod side clearance

The angle of an SAE flare fitting is

- A. 15 degrees
- B. 37 degrees
- C. 45 degrees
- D. 90 degrees

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

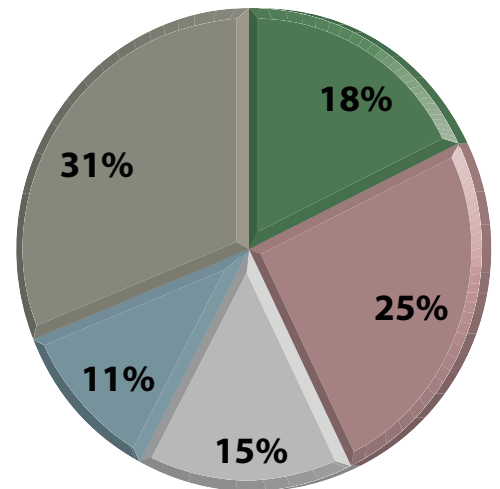
Participant will check and adjust rocker lever clearance in the engine provided.

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.



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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.

