

General Assessment Information

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Test Type: The Diesel Technology assessment 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 Connecticut, North Carolina, and Pennsylvania.



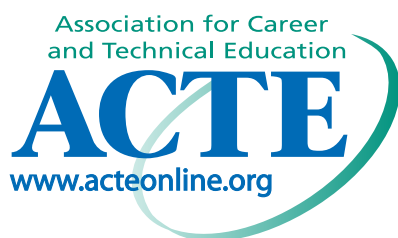
47.0613-
Medium/Heavy Vehicle and
Truck Technology/Technician



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.



In the lower division baccalaureate/associate degree category, 3 semester hours in Automotive Technology or Diesel Technology

Written Assessment

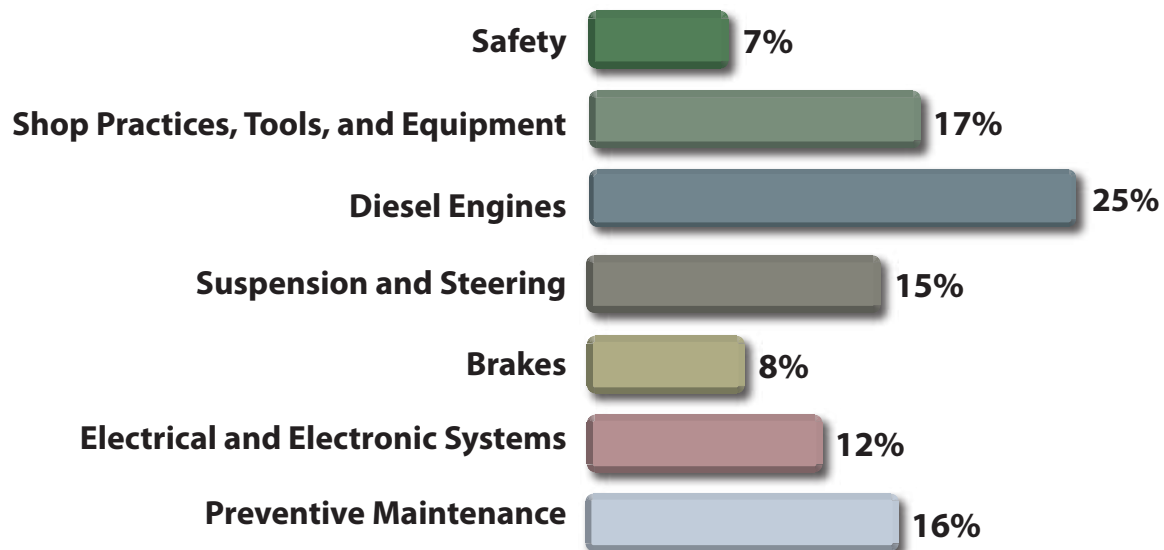
NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

Administration Time: 3 hours

Number of Questions: 155

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

Areas Covered



Specific Competencies and Skills Tested 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
- Exhibit familiarity with basic fabrication techniques
- Identify and select lines and fittings (SAE flare, pipe, hoses, tubing, etc.)
- Identify, select, and use hand tools and basic shop equipment
- Identify and select proper fasteners

Diesel Engines

- Display knowledge of diesel engine terminology
- Display knowledge of diesel engine operation
- Display understanding of exhaust and induction systems
- Identify components and functions of cooling systems
- Identify components and functions of lubricating systems
- Identify components and functions of fuel systems
- Display knowledge of diesel engine assembly

Suspension and Steering

- Identify and repair cab components
- Identify, maintain, and repair tires, rims, 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 (front, rear)
- Maintain proper vehicle alignment

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Specific Competencies and Skills (continued)

Brakes

- Identify, inspect, and repair hydraulic foundation brake system components and functions
- Identify, inspect, and repair air foundation brake system components and functions
- Identify, inspect, and repair air system components

Electrical and Electronic Systems

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

Preventive Maintenance

- Perform troubleshooting and preventive maintenance on engine systems
- Perform troubleshooting and preventive maintenance on cab and hood
- Perform troubleshooting and preventive maintenance on frame and chassis
- Perform troubleshooting and preventive maintenance on clutch and drivetrain



Sample Questions

If battery acid gets in the eyes, the first action should be to

- A. apply pressure to the eyes
- B. flush eyes with suds
- C. flush eyes with cool water
- D. wipe eyes with a cloth

To safely lift a diesel engine, use a/an

- A. two-ton hydraulic floor jack
- B. rope and pulley hung from an overhead beam
- C. a lifting device of adequate capacity
- D. tractor mounted front-end-loader

The primary purpose of a turbocharger is to

- A. increase the volumetric efficiency
- B. eliminate the need for an aftercooler
- C. increase engine brake efficiency
- D. decrease throttle response delay

The two long main components of the chassis frame are called the

- A. frames
- B. crossmembers
- C. rails
- D. channels

How many pins are in a standard tractor/trailer light cord plug?

- A. 5
- B. 7
- C. 8
- D. 10

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Sample Questions (continued)

When using an acetylene cutting torch, the flame should appear

- A. shorter than 2 inches; blue and white
- B. longer than 2 inches; blue and white
- C. shorter than 2 inches; yellow
- D. longer than 2 inches; yellow

The diesel engine is often called a/an _____ ignition engine.

- A. electrical
- B. spark
- C. glow plug
- D. compression

A hole in the crown of a piston could be caused by

- A. excessive valve clearance
- B. an air induction leak
- C. a faulty nozzle
- D. a turbocharger oil seal leak

Using parabolic leaf springs provides smoother riding comfort and less stiffness than

- A. multi-leaf springs
- B. trailing arms
- C. dampers
- D. panhard rolls

Check coolant SCA (supplemental coolant additives) level

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

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:

15% Check and Adjust Rocker Level Clearance

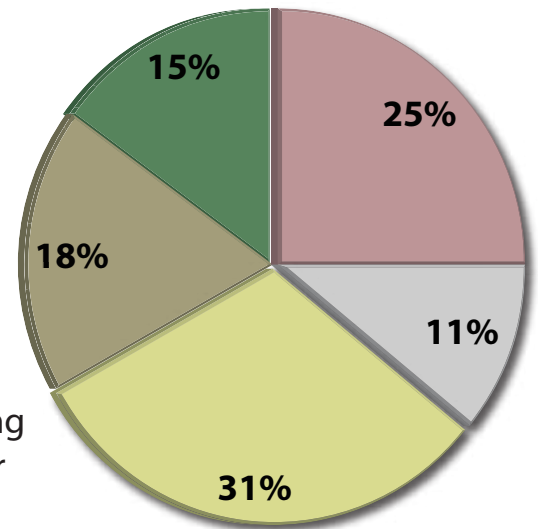
Use of manuals or electronic media, procedure used to check valve adjustment, procedure used to adjust valves, accuracy of specifications, accuracy of positioning engine for valve adjustment, accuracy of adjustment for valve clearance, and time to complete Job 1.

18% Cylinder Liner Installation

Look up liner protrusion specifications, installation of liner with hold-downs, measurement of installed height, measurement of liner protrusion specifications, accuracy of counterbore measurement, accuracy of liner flange thickness measurement, calculation of liner protrusion, accuracy of comparison measurements, and time to complete Job 2.

31% Electrical Testing

Use of meter to perform high-rate discharge test, open circuit battery voltage, determination of battery state of charge, battery capacity rating, discharge rate, duration of capacity test, acceptable battery voltage, battery voltage under test conditions, results of test, battery bounce-back (recovery) voltage, use of meter to perform starter draw test, disable engine to prevent starting, crank engine, starter draw amperage, starter cranking voltage, use of meter to perform alternator maximum output test, engine operated at correct test RPM, battery voltage at maximum output, alternator maximum output, and time to complete Job 3.



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Areas Covered (continued)

11% Perform Coolant System Inspection

Apply and record test pressure used for the system, pressure test the pressure cap and serviceability, record maximum pressure held by the pressure cap, perform SCA test on provided coolant sample, determine the freeze point of the sample, and time to complete Job 4.

25% Wheel Bearing Adjustment and Brake Stroke Measurement

Follow TMC guidelines to adjust wheel bearing, identify type of wheel nut system, apply and record initial torque, perform and record initial back-off, perform and record final adjusting nut torque, perform and record final back-off, perform and record jam-nut torque, measure and record endplay, record endplay specifications, determine/record if endplay is to specifications, brake stroke measurement, record push-rod retracted length, brake stroke measurement, record push-rod extended length, calculate/record actual push-rod stroke to 1/8 inch, time to complete Job 5.



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.

