

Massachusetts CTE Teacher Testing Program

Diesel Technology Content Outline

Written and Performance Exam General Overview

- The intent of this exam is to assess the candidate's ability to teach the skills found in the Massachusetts Technical Education Framework.
- The written exam is a state-developed exam aligned to the frameworks which can be accessed [here](#). The performance exam is a NOCTI-developed teacher test and has been determined by DESE to align to the state frameworks.
- Many questions and tasks require a synthesis of knowledge based on experience in the field and may not be found in any book.
- Use this exam outline and the Massachusetts Technical Education Framework to focus your preparation for the exams.
- Candidates are encouraged to prepare for their written exam by reviewing textbooks and reference material which have been listed as part of this exam outline. These resources can be found using online search tools, online vendors, and websites.

Written Exam

- Number of Questions: 100
- Administration Time: 3 hours
- Passing Score: 70.0%
- Administration Method: Remote Proctored Online Testing Session

Written Exam Content Coverage

7%	<i>Diesel Health and Safety</i>
5%	<i>Diesel Tools and Equipment</i>
5%	<i>Truck Electrical Systems</i>
13%	<i>Diesel Engine System</i>
4%	<i>Diesel Truck Inspection</i>
5%	<i>Diesel Fuel Systems</i>
4%	<i>Diesel Air Conditioning</i>
15%	<i>Diesel Drive Train</i>
18%	<i>Diesel Engine Components</i>
10%	<i>Diesel Truck Brakes</i>

- 5% *Diesel Engine Electronics***
- 4% *Diesel Steering and Suspension***
- 5% *Diesel Technology Related Mathematics***

Written Exam Reference Materials (Reference Current Edition)

- **Diesel Technology: Fundamentals, Service, and Repair** by Andrew Norman, John Corinchock, and Robert Scharff (Goodheart-Willcox)
- **Heavy Duty Truck Systems** by Andrew Norman, John Corinchock and Robert Scharff (Cengage Learning)
- **Hydraulics: Fundamentals of Service** by John Kuhar (Deere & Co.)

Materials Needed for the Written Exam

- A four-function calculator is included in the online testing system. No other calculators are permitted.
- Scrap paper and pencil/pen are permitted.

Written Exam Sample Items

Each question on the exam consists of one incomplete sentence or question followed by four choices. Some items reference an image or diagram. A few sample items are included below; the correct answer is designated with an asterisk (*).

Balancing-Coil and Electronic are two types of:

- a. shutterstats.
- b. fuel gauges. (*)
- c. fuel injectors.
- d. ignition coils.

An alternator full field test is used to:

- a. test the polarity of the alternator diodes.
- b. determine whether the fault is in the alternator or regulator. (*)
- c. find an open in the stator.
- d. test the alternator capacitor.

NOCTI Performance Exam

- Administration Time: 2 hours and 45 minutes
- NOCTI Criterion-Referenced Cut Score/Passing Score: 89.3%
- Administration Method: Onsite at a DESE approved Massachusetts Area Testing Center (MATC) location. Candidates must register and schedule their exam session through NOCTI.

Performance Exam Content Coverage

- 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% *Diesel Engine Performance Trouble Codes***
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.

Performance Exam Requirements

Candidate Supplied

Candidates must bring all appropriate Personal Protective Equipment (PPE), attire/uniform, and any other safety items (i.e., safety glasses) routinely expected to be used by an employee in the related industry. If the candidate does not bring what is needed to safely complete all jobs on the exam as required in the workplace, the testing session will need to be rescheduled at the candidate's expense.

Site Supplied

Additional equipment and supplies needed to complete the jobs on the performance test will be provided by the testing site.

Performance Exam Site Requirements

Testing sites may have individual requirements based on location and any relevant and current guidance from the Center for Disease Control and Prevention (CDC).