

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

10% Agricultural Mechanics Health and Safety

2% Agricultural Mechanics Tools and Equipment

30% Agricultural Machinery and Equipment

- Small Engines
- Tractors
- Fuel Systems
- Transmissions and Clutches
- Charging and Ignition Systems
- Gasoline and Diesel Engines

30% Construction Repair and Maintenance

- Carpentry
- Hand and Power Tools
- Masonry

25% Metal Work

- Arc SMAW, GMAW, GTAW, and FCAW Welding
- Manipulation of Hot and Cold Materials

3% Irrigation Systems

- Fundamentals
- Plumbing

Written Exam Reference Materials (Reference Current Edition)

- **Agricultural Mechanics and Technology Systems** by J.P. Hancock, Don W. Edgar, Michael L. Pate, Lori A. Dyer, and W. Brian Hoover (Goodheart-Willcox)
- **Diesel Technology** by John Corinchock and Andrew Norman (Goodheart-Willcox)
- **Small Engines** by R. Bruce Radcliff (American Technical Publishers)

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 (*).

What should you look for to determine if a tractor is gasoline or diesel powered?

- Tractors built after 1978 are all diesel.
- Diesel tractors have two or four carburetors while gas tractors have only one.
- Diesel tractors do not have a carburetor or spark plugs. (*)
- The mufflers on diesels are always vertical and gas tractor mufflers are always horizontal.

Standard concrete blocks are normally laid with a mortar joint that is _____ inch thick.

- 1/8
- 3/8 (*)
- 1/2
- 5/8

NOCTI Performance Exam

- Administration Time: 3 hours
- NOCTI Criterion-Referenced Cut Score/Passing Score: 86.3%
- 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

- 22%** **Horizontal Square Groove Butt Weld - SMAW**
Participants will safely execute a horizontal square groove butt weld by selecting electrodes, attaching the group clamp, setting the correct amperage, gap, and tack, and positioning the metal correctly with a quality bead.
- 19%** **Oxyacetylene Cutting**
Participants will safely adjust regulators, light, and cut using an oxyacetylene torch, and evaluate the product for accuracy.
- 20%** **Troubleshoot and Diagnose a Gas Engine**
Participants will collect the engine model number, compression reading, gap measurement and spark intensity to determine and explain engine performance.
- 12%** **Install a Switch to Control a Light**
Participants will verify that the circuit and boxes are properly grounded, correctly attach the wires to the terminals, and control the light switch.
- 16%** **Mark a Common Rafter**
Participants will correctly measure all specifications, mark the upper and lower plumb, and bird's mouth cuts.
- 11%** **Set-up and Instrument Leveling of the Farm Level**
Participants will properly care for equipment, set up and level the instrument, and accurately record the rod reading.

Performance Exam Requirements

Candidate Supplied

Candidates must bring all appropriate Personal Protective Equipment (PPE), attire/uniform, and any other safety items 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).