

Written and Performance Exam General Overview

- The intent of this exam is to assess your ability to teach the skills found in the Massachusetts Technical Education Framework.
- This exam is aligned to the frameworks which can be accessed [here](#).
- Many questions and tasks require a synthesis of knowledge based on experience in the field and may not be found in any book.
- Candidates are encouraged to prepare for their exam by reviewing textbooks and reference material which has been listed as part of this exam outline. These resources can be found using online search tools, online vendors, and websites.
- Contact the Technical Teacher Testing Office if you need further assistance in locating resources listed in the exam outline.
- Use this exam outline and the Massachusetts Technical Education Framework to focus your preparation for the exam.

Written Exam

- Number of Questions: 100
- Administration Time: 3 hours
- Administration Method: Remote Proctoring Online 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?

- a. Tractors built after 1978 are all diesel.
- b. Diesel tractors have two or four carburetors while gas tractors have only one.
- *c. Diesel tractors do not have a carburetor or spark plugs.
- d. 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.

- a. 1/8
- *b. 3/8
- c. 1/2
- d. 5/8

Performance Exam

- Administration Time: 4 hours
- Administration Method: Onsite at an approved Teacher Testing Location

Performance Exam Content Coverage

19% Prepare and Grind Valves and Seats in a Small Engine

- Set Up Equipment
- Remove Valves
- Clean Valves and Ports
- Grind Valves and Seats
- Replace Valves
- Adjust Valves
- Test Run Engine

19% Time and Replace a Battery Type Distributor on a Farm Tractor

- Time Engine
- Install Distributor
- Determine Firing Order
- Start and Time Engine with Timing Light

9% Cut Two Pieces of Metal with an Acetylene Torch

- Adjust Torch
- Cut Metal Accurately and Cleanly
- Close Tanks and Bleed Gauges

9% Weld Metal Sections with Electric Arc/GMAW (MIG)

- Prepare Metal
- Adjust Machine
- Select Rod
- Perform Horizontal, Vertical or Butt Weld

19% Construct an Electrical Circuit

- Construct a Basic Electrical Circuit Using a 5 Pin Bosch Relay

19% Cut a Rafter or Stair Stringer to Specification

- Layout a Rafter or Stair Stringer
- Cut Rafter or Stair Stringer
- Demonstrate Industry and Professional Use of Skill Saw

6% Safety

- Use of PPE
- Hand and Power Tools Used to Industry and OSHA Safety Standards
- Cutting and MIG Welding Performed According to Industry and OSHA Safety Standards
- Safety Practices Followed

Materials Required for the Performance Exam (Candidate Must Supply)

- Face mask (cotton face covering or respirator which fully cover the nose and mouth)
- Eye protection
- Disposable gloves
- Industry Approved Working Attire and Shoes (Long Hair Must be Restrained)
- Pen and/or Pencil

Note: All necessary tools and supplies needed to perform a task will be provided. Ear protection will be available. Candidate may leave if test is completed prior to four hours. A break will be allowed. No books or notes will be allowed. Cell phones are prohibited during the exam administration.

Onsite Performance Exam Requirements

- Candidate must practice social distancing and wear the appropriate face covering that covers the nose and mouth while at the exam site.
- Testing sites may have individual requirements based on location and the current guidance from the Center for Disease Control and Prevention (CDC).

Performance Exam Reference Materials (Reference Current Edition)

- **Safety Orientation** by NCCER (Pearson Prentice Hall) www.crafttraining.com
- **OSHA Regulations** www.osha.gov
 - [1910.1200 - Hazard Communication](#)
 - [1910 Subpart I - Personal Protective Equipment](#)