
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%	<i>Safety and Health</i>
25%	<i>Fundamentals of Stationary Engineering</i>
5%	<i>Health and Energy</i>
4%	<i>Chapter 46 Massachusetts General Laws and the A. SME Code</i>
10%	<i>Related Fundamental Mathematics</i>
25%	<i>Fundamentals of Boiler Operations</i>
10%	<i>Joining and Assembling Piping and Associated Accessories</i>
6%	<i>Mechanic Drive Systems</i>
5%	<i>Fundamentals of Electricity Systems</i>

Written Exam Reference Materials (Reference Current Edition)

- **Boiler Operators Workbook** by Dean R. Wilson (American Technical Publishers)
- **Boiler Operators Exam Preparation Guide** by Theodore B. Sauselin (McGraw-Hill)
- **Stationary Engineering** by Harold J. Frost, and Daryl R. Frederick, and M. Steingress (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 (*).

A steam pressure gauge is calibrated in:

- a. btu's per pound.
- b. pounds per cubic inch.
- c. inches per temperature increase.
- *d. pounds per square inch.

A direct cause of over-heating of the boiler tubes is:

- a. soot formation.
- b. over-firing.
- c. insufficient air.
- *d. scale formation on the tubes.

Performance Exam

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

Performance Exam Content Coverage

14% *Identify Boiler Fittings*

21% *Perform Work on Steam and Water Systems*

- Repair and Rebuild Steam Trap

27% *Treat Boiler Water*

- Obtain Water Samples from Boiler
- Analyze Water Samples
- Bottom Boiler Blow Down

7% Perform the Duties and Functions of an Auxiliary Equipment Operator

- Clean Oil Strainer

21% Perform Maintenance Functions

- Remove and Clean Fuel Burner Gun
- Replace Gauge Glasses on Water Column

10% Safety

- Candidates Will Be Evaluated for Adherence to OSHA and Industry Standards

Materials Required for the Performance Exam (Candidate Must Supply)

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| <ul style="list-style-type: none">• Face mask (cotton face covering or respirator which fully cover the nose and mouth)• Eye protection• Disposable gloves | <ul style="list-style-type: none">• Industry Approved Working Attire and Shoes (No Loose Clothing or Jewelry and Long Hair Must be Restrained)• Common Hand Tools |
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Note: Rubber gloves for chemical testing and heat resistance gloves will be provided at the test site. No books or notes will be allowed. Cell phones are prohibited during the exam administration.

Onsite Performance Exam Requirements

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- 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)

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- **Boiler Operators Workbook** by Dean R. Wilson (American Technical Publishers)
 - **Boiler Operators Exam Preparation Guide** by Theodore B. Sauselin (McGraw-Hill)
 - **Stationary Engineering** by Harold J. Frost, and Daryl R. Frederick, and M. Steingress (American Technical Publishers)
 - **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](#)