
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% Health and Safety

- Regulations and Practices

10% Fundamentals of Metal Fabrication and Joining Process

- Terminology
- Measurement
- Hand Tools

20% Blueprint Reading

- Print Terminology
- Views
- Material Layout

5% Hand and Power Tools

15% Metal Fabrication Processes

- Mechanical Cutting
- Metal Forming
- Cutting and Gouging

25% Welding and Joining Processes

- Oxy-Acetylene
- SMAW
- GMAW
- Flux Core
- Gas Tungsten Arc Spot Welding

15% Metal Fabrication and Joining Technologies Related Mathematics

Written Exam Reference Materials (Reference Current Edition)

- **Metalwork Technology and Practice** by Victor Repp (McGraw-Hill/Glencoe)
- **Blueprint Reading for Industry** by Walter Brown (Goodheart-Willcox)
- **Welding Principles & Applications** by Larry Jeffus (Cengage)
- **Math For Welders** by Nino Marion (Goodheart-Willcox)

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 (*).

When is a fire watch needed?

- When welding and cutting around combustible materials
- When welding within 35' of combustible materials, or when sparks can reach materials further than 35' away (*)
- When only welding or cutting in a confined space
- When welding above other work areas

What is meant by a welding machine Duty Cycle?

- The amount of time the machine switches to high frequency mode
- The Duty Cycle controls the polarity of the welding machine
- It is the percentage of time a welding machine can be used continuously at full amperage (*)
- A welding machine does not have a Duty Cycle of operation

Performance Exam

- Administration Time: 4 hours
- NOCTI Criterion-Referenced Cut Score/Passing Score: 70%
- 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

32% Flange with Round Cylinder Ring

The candidate will use safety layout techniques and power stationary equipment, use plasma to cut, fabricate and GMAW weld product according to specifications and OSHA and industry safety standards.

20% Fabricate and Weld Aluminum or Steel Cover

The candidate will fabricate and weld aluminum box cover G.T.A.W. using layout technique and power and manual stationary equipment to specifications and OSHA and industry safety standards.

40% Fabricate and Weld a H.R.S. Steel Box with Handles

The candidate, using layout technique and power stationary equipment, will fabricate and weld steel box to specifications and OSHA and industry standards.

8% Safety

The candidate will demonstrate safety knowledge and follow all procedures according to OSHA and industry safety standards.

Performance Exam Requirements

Candidate Supplied

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

The following is a list of machines available for use at the exam site.

- 175 Ton Accurpress (for bending)
- AccurShear (for cutting)
- Hypertherm PowerMax 45 (Plasma Cutter)
- Welding Machines
- Syncrowave 250 (Stick, Tig)
- Shopmate 300DX (Mig)
- Millermatic 251 (Mig)

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).