

Massachusetts Technical Teacher Testing Program Automotive Technology Content Outline

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

5% **Health & Safety**

4% **Automotive Fundamentals**

- Hand Tools
- Power Tools
- Fasteners
- Vehicle Service
- Basic Maintenance

22% **Engine/Engine Performance**

- Precision Measuring
- General Engine Problems
- Emission Control Systems
- Engine Repair Techniques
- Engine Performance

9% **Drive Train**

- Automatic Transmission
- Manual Transmission
- Drive Axles
- Four-Wheel Drive
- Manual Transmission Clutch Assembly

20% Electrical

- General Electrical Systems
- Batteries
- Starting System
- Charging System
- Electrical Accessories
- Ignition Systems
- Basic Hybrid Theory

10% Heating and Air Conditioning

- Automotive Refrigerant Theory
- Heating & Air Conditioning

15% Suspension and Steering

- Wheels and Tires
- Suspension Systems
- Steering Systems
- Wheel Alignment

15% Brakes

- System Research & Service
- Hydraulic Brakes
- Drum Brakes
- Disc Brakes
- Power Brakes
- Miscellaneous Components
- Antilock Brake Systems

Written Exam Reference Materials (Reference Current Edition)

- **Automotive Technology** by Jack Erjavec (Delmar Thomson Learning)
- **ASE Test Prep Series** (Delmar Thomson Learning)
- **Modern Automotive Technology** by James E. Duffey (Goodheart-Willcox)
- **Automotive Technology – Principles, Diagnosis, and Service** by James Halderman (Pearson-Prentice Hall)
- **Automotive Service – Inspection, Maintenance, and Repair** by Tim Giles (Delmar Cengage Learning)

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 (*).

In a parallel circuit when you add a resistor to an existing circuit, the total circuit resistance:

- a. goes up.
- *b. goes down.
- c. stays the same.
- d. none of the above.

When replacing a hydraulic brake line, which of the following is the correct procedure?

- a. Use seamless copper tubing with single flared ends.
- *b. Use double flared single length steel line.
- c. Use single length non-flared steel or copper tubing.
- d. Use double flared single length copper tubing.

Performance Exam

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

Performance Exam Content Coverage

13% *Air Conditioning and Heating*

26% *Electrical*

8% *Engine Performance*

10% *Brakes*

13% *Steering and Suspension*

13% *Driveline*

13% *Engine, Mechanical*

5% *Safety*

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 work boots/shoes
- Calculator

Note: No books or notes will be allowed. Cell phones are prohibited during the exam administration.

Candidates will be evaluated on the following criteria:

- Ability to follow task procedures to industry standards and to manufacturer's specifications.
- Correct selection of tools and equipment.
- Demonstration of work habits to trade standards.
- Result of completed tasks.
- Safety to OSHA standards.

The following **equipment** will be available at the testing site.

- Snap-On mt 1560 avr
- Sun VAT45 Series Tester
- Snap-On Verus Scan Tool
- Genisys Scan Tool
- Hunter 4 Wheel Alignment Machine
- Snap-On DVOM
- Power Probe Scan Tool
- GM Tech II
- Robinar A/C Machine 134 Charging Station
- Fluke77 Series Multimeters
- Autel Maxisys Scan Tool
- Midtronic Battery Tester

The following **resources** will be available at the testing site.

- Mitchell On Demand
- Aldata
- Identifix

Note: All alignment tasks will be performed on a four-wheel alignment system.

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](#)