

Massachusetts CTE Teacher Testing Program

Telecommunications and Fiber Optics Content Outline

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

5%	<i>Fundamentals of Safety and Health</i>
3%	<i>Industry Standards</i>
7%	<i>Low Voltage Wiring</i>
10%	<i>Cabling and Connectors</i>
10%	<i>Pre-Wiring</i>
18%	<i>Fundamentals of Electricity/Electronics</i>
10%	<i>Fundamentals of Telephony</i>
10%	<i>Fiber Optics Theory and Applications</i>
8%	<i>Principles of Electronic Communication</i>
10%	<i>Fundamentals of Wireless Communication</i>

7% **Tools and Equipment**

2% **Troubleshooting Skills**

Written Exam Reference Materials (Reference Current Edition)

- **The Essential Guide to Telecommunications** by Annabel Z. Dodd (Prentice Hall)
- **Telecom 101** by Eric C. Coll (Tecom Training Institute)
- **Introduction to Fiber Optics** by John Crisp and Barry Elliott (Newnes)
- **Fiber-Optic Communication Systems** by Govind P. Agrawal (Wiley)

References included in the Massachusetts State Framework Standards for Telecommunications and Fiber Optics

- **Telephone Systems** by Robert Kellejian and T. Michael Bishoff (Heathkit)
- **Principles of Electronic Communication** (Heathkit)
- **Principles of Electric Circuits** by Thomas Floyd and David Buchla (Pearson)
- **Practical Fiber Optics** by David Bailey and Edwin Wright (Newnes)
- **Electronic System Technician** by NCCER (Pearson)
- **Digital Electronics** by Roger Tokheim (McGraw Hill)
- **Tools for Problem Solving** (Pearson)

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 (*).

The copper cabling from the customer's premises to the Central Office is commonly known as the

- a. demarc line.
- b. short haul line.
- c. local loop. (*)
- d. POTS.

Bluetooth wireless communications operates in the frequency range of

- a. 2.402 GHz to 2.480 GHz. (*)
- b. 2.402 GHz to 2.580 GHz.
- c. 2.502 GHz to 2.580 GHz.
- d. 2.502 GHz to 2.680 GHz.

Performance Exam – COMING SOON!