



*NEW YORK STATE*  
TEACHER  
CERTIFICATION  
EXAMINATIONS™



**PREPARATION  
GUIDE**  
Safety Net  
Educational  
Technology Specialist  
CST (971)

The University of the State of New York • NEW YORK STATE EDUCATION DEPARTMENT • Office of Teaching Initiatives, Albany, New York 12234

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**As of June 2015, this test is administered as a computer-based test.  
See [www.nystce.nesinc.com](http://www.nystce.nesinc.com) for current program information.**

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# NEW YORK STATE TEACHER CERTIFICATION EXAMINATIONS™

## PREPARATION GUIDE Safety Net Educational Technology Specialist CST (971)

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# ■ INTRODUCTION

## **Purpose of This Preparation Guide**

This preparation guide is designed to help familiarize candidates with the content and format of a test for the New York State Teacher Certification Examinations (NYSTCE®) program. Education faculty and administrators at teacher preparation institutions may also find the information in this guide useful as they discuss the test with candidates.

The knowledge and skills assessed by the test are acquired throughout the academic career of a candidate. A primary means of preparing for the test is the collegiate preparation of the candidate.

This preparation guide illustrates some of the types of questions that appear on a test; however, the set of sample questions provided in this preparation guide does not necessarily define the content or difficulty of an entire actual test. All test components (e.g., directions, question content and formats) may differ from those presented here. The NYSTCE program is subject to change at the sole discretion of the New York State Education Department.

## **Organization of This Preparation Guide**

Contained in the beginning sections of this preparation guide are general information about the NYSTCE program and how the tests were developed, a description of the organization of test content, and strategies for taking the test.

Following these general information sections, specific information about the test described in this guide is presented. The test objectives appear on the pages following the test-specific overview. The objectives define the content of the test.

Next, information about the multiple-choice section of the test is presented, including sample test directions. Sample multiple-choice questions are also presented, with the correct responses indicated and explanations of why the responses are correct.

Following the sample multiple-choice questions, a description of the written assignment section of the test is provided, including sample directions. A sample written assignment is presented next, followed by a sample strong response to the assignment and an evaluation of that response.

## **For Further Information**

If you have questions after reading this preparation guide, you may wish to consult the NYSTCE Registration Bulletin. You can view or print the registration bulletin online at [www.nystce.nesinc.com](http://www.nystce.nesinc.com).

# ■ GENERAL INFORMATION ABOUT THE NYSTCE

## How Were the NYSTCE Tests Developed?

The New York State Teacher Certification Examinations are criterion referenced and objective based. A criterion-referenced test is designed to measure a candidate's knowledge and skills in relation to an established standard rather than in relation to the performance of other candidates. The explicit purpose of these tests is to help identify for certification those candidates who have demonstrated the appropriate level of knowledge and skills that are important for performing the responsibilities of a teacher in New York State public schools.

Each test is designed to measure areas of knowledge called subareas. Within each subarea, statements of important knowledge and skills, called objectives, define the content of the test. The test objectives were developed for the New York State Teacher Certification Examinations in conjunction with committees of New York State educators.

Test questions matched to the objectives were developed using, in part, textbooks; New York State learning standards and curriculum guides; teacher education curricula; and certification standards. The test questions were developed in consultation with committees of New York State teachers, teacher educators, and other content and assessment specialists.

An individual's performance on a test is evaluated against an established standard. The passing score for each test is established by the New York State Commissioner of Education based on the professional judgments and recommendations of New York State teachers. Examinees who do not pass a test may retake it at any of the subsequently scheduled test administrations.

## Organization of Content

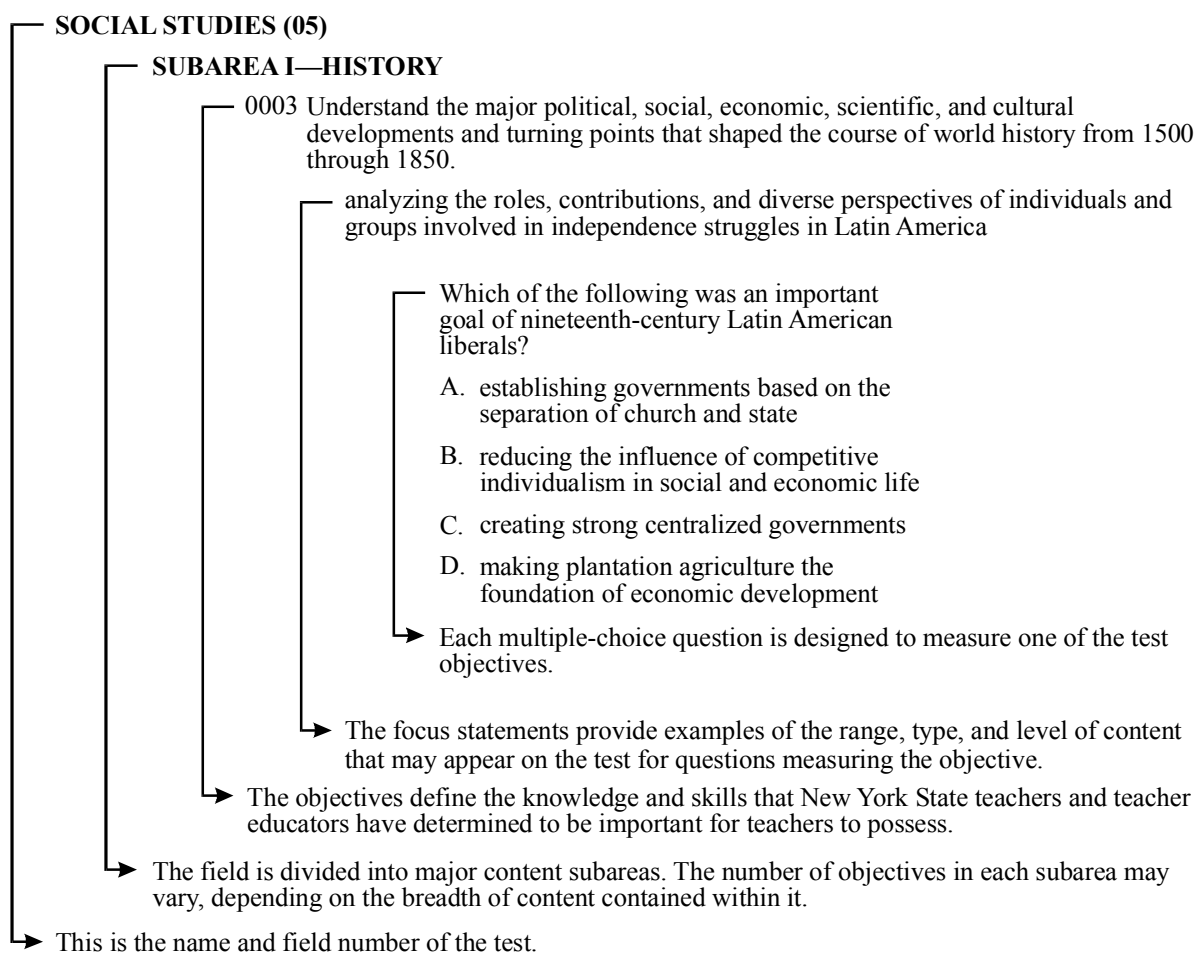
The content covered by each test is organized into **subareas**. These subareas define the major content domains of the test.

Subareas typically consist of several **objectives**. Objectives provide specific information about the knowledge and skills that are assessed by the test.

Each objective is elaborated on by **focus statements**. The focus statements provide examples of the range, type, and level of content that may appear on the tests.

**Test questions** are designed to measure specific test objectives. The number of objectives within a given subarea generally determines the number of questions that will address the content of that subarea on the test. In other words, the subareas that consist of more objectives will receive more emphasis on the test and contribute more to a candidate's test score than the subareas that consist of fewer objectives.

The following example, taken from the field of Social Studies, illustrates the relationship of test questions to subareas, objectives, and focus statements.



# ■ TEST-TAKING STRATEGIES

## **Be On Time.**

Arrive at the test center on time so that you are rested and ready to begin the test when instructed to do so.

## **Follow Directions.**

At the beginning of the test session and throughout the test, follow all directions carefully. This includes the oral directions that will be read by the test administrators and any written directions in the test booklet. The test booklet will contain general directions for the test as a whole and specific directions for individual test questions or groups of test questions. If you do not understand something about the directions, do not hesitate to raise your hand and ask your test administrator.

## **Pace Yourself.**

The test schedule is designed to allow sufficient time for completion of the test. Each test session is four hours in length. The tests are designed to allow you to allocate your time within the session as you need. You can spend as much time on any section of the test as you need, and you can complete the sections of the test in any order you desire; however, you will be required to return your materials at the end of the four-hour session.

Since the allocation of your time during the test session is largely yours to determine, planning your own pace for taking the test is very important. Do not spend a lot of time with a test question that you cannot answer promptly; skip that question and move on. If you skip a question, be sure to skip the corresponding row of answer choices on your answer document. Mark the question in your test booklet so that you can return to it later, but be careful to appropriately record on the answer document the answers to the remaining questions.

You may find that you need less time than the four hours allotted in a test session, but you should be prepared to stay for the entire time period. Do not make any other commitments for this time period that may cause you to rush through the test.

## **Read Carefully.**

Read the directions and the questions carefully. Read all response options. Remember that multiple-choice test questions call for the "best answer"; do not choose the first answer that seems reasonable. Read and evaluate all choices to find the best answer. Read the questions closely so that you understand what they ask. For example, it would be a waste of time to perform a long computation when the question calls for an approximation.

Read the test questions, but don't read into them. The questions are designed to be straightforward, not tricky.



## Mark Answers Carefully.

Your answers for all multiple-choice questions will be scored electronically; therefore, the answer you select must be clearly marked and the only answer marked. If you change your mind about an answer, erase the old answer completely. Do not make any stray marks on the answer document; these may be misinterpreted by the scoring machine.

**IF YOU SKIP A MULTIPLE-CHOICE QUESTION, BE SURE TO SKIP THE CORRESPONDING ROW OF ANSWER CHOICES ON YOUR ANSWER DOCUMENT.**

You may use any available space in the test booklet for notes, but **your answers and your written response must be clearly marked on your answer document. ONLY ANSWERS AND WRITTEN RESPONSES THAT APPEAR ON YOUR ANSWER DOCUMENT WILL BE SCORED.** Answers and written responses in your test booklet will not be scored.

## Guessing

As you read through the response options, try to find the best answer. If you cannot quickly find the best answer, try to eliminate as many of the other options as possible. Then guess among the remaining answer choices. Your score on the test is based on the number of test questions that you have answered correctly. There is no penalty for incorrect answers; therefore, it is better to guess than not to respond at all.

## Passages or Other Presented Materials

Some test questions are based on passages or other presented materials (e.g., graphs, charts). You may wish to employ some of the following strategies while you are completing these test questions.

One strategy is to read the passage or other presented material thoroughly and carefully and then answer each question, referring to the passage or presented material only as needed. Another strategy is to read the questions first, gaining an idea of what is sought in them, and then read the passage or presented material with the questions in mind. Yet another strategy is to review the passage or presented material to gain an overview of its content, and then answer each question by referring back to the passage or presented material for the specific answer. Any of these strategies may be appropriate for you. You should not answer the questions on the basis of your own opinions but rather on the basis of the information in the passage or presented material.

## Check Accuracy.

Use any remaining time at the end of the test session to check the accuracy of your work. Go back to the test questions that gave you difficulty and verify your work on them. Check the answer document, too. Be sure that you have marked your answers accurately and have completely erased changed answers.

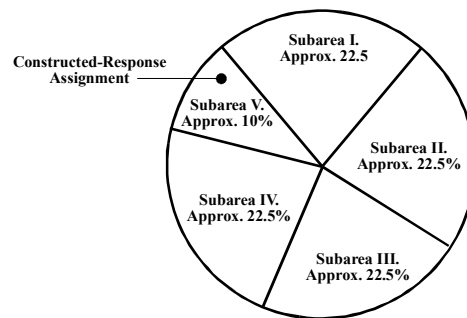
# ABOUT THE SAFETY NET EDUCATIONAL TECHNOLOGY SPECIALIST TEST

The purpose of the Safety Net Educational Technology Specialist Content Specialty Test (CST) is to assess knowledge and skills in the following five subareas:

- Subarea I. Foundations of Educational Computing and Technology
- Subarea II. Professional Applications of Technology
- Subarea III. Integrating Technology Into Education
- Subarea IV. Technology Leadership and Resource Management
- Subarea V. Integrating Technology Into Education: Constructed-Response Assignment

The test objectives presented on the following pages define the content that may be assessed by the Safety Net Educational Technology Specialist CST. Each test objective is followed by focus statements that provide examples of the range, type, and level of content that may appear on the test for questions measuring that objective.

The test contains approximately 90 multiple-choice test questions and one constructed-response (written) assignment. The figure below illustrates the approximate percentage of the test corresponding to each subarea.



The section that follows the test objectives presents sample test questions for you to review as part of your preparation for the test. To demonstrate how each objective may be assessed, a sample question is presented for each objective. For objective 16, a passage and two questions are presented. The correct response and an explanation of why the response is correct follow each question. A sample written assignment is also presented, along with an example of a strong response to the assignment and an evaluation of that response.

The sample questions are designed to illustrate the nature of the test questions; they should not be used as a diagnostic tool to determine your individual strengths and weaknesses.

# ■ SAFETY NET EDUCATIONAL TECHNOLOGY SPECIALIST TEST OBJECTIVES

Foundations of Educational Computing and Technology  
Professional Applications of Technology  
Integrating Technology Into Education  
Technology Leadership and Resource Management  
Integrating Technology Into Education: Constructed-Response Assignment

The New York State Educational Technology Specialist has the knowledge and skills necessary to teach effectively in New York State public schools. The Educational Technology Specialist has a basic understanding of computer operations and concepts and is familiar with equity, ethics, and legal issues associated with the use of technology in education. The Educational Technology Specialist is knowledgeable about the professional applications of technology and is able to plan, implement, and assess concepts and skills relevant to educational computing and technology literacy for all students across the curriculum. The Educational Technology Specialist is able to apply technology-related research findings to the creation and maintenance of effective learning environments and knows how to develop and implement educational technology professional development programs to assist other educators in furthering their understanding of teaching and learning with technology. Finally, the Educational Technology Specialist understands issues related to facilities and resource management, and managing the change process in the educational environment.

## **SUBAREA I—FOUNDATIONS OF EDUCATIONAL COMPUTING AND TECHNOLOGY**

### **0001 Understand basic computer operations, concepts, and care.**

For example:

- demonstrating knowledge of various kinds of hardware, peripheral devices, and software found in the educational environment
- demonstrating knowledge of major operations systems associated with computing platforms found in the educational environment
- demonstrating knowledge of terminology related to computers and technology
- demonstrating knowledge of basic computing procedures (e.g., startup and shutdown sequences, network login procedures, routine system operating configurations)
- demonstrating knowledge of how to clean and maintain hardware, peripheral devices, and removable media
- demonstrating knowledge about virus scanning, opening and closing files, multitasking, saving files in multiple formats, and using shared files
- demonstrating knowledge of the installation of peripheral devices and related software

### **0002 Understand basic troubleshooting techniques for computer systems and related peripheral devices.**

For example:

- recognizing appropriate methods for isolating problems and checking connections
- demonstrating knowledge of common problems with peripheral devices, Internet connections, and network use
- identifying strategies for troubleshooting various hardware and/or software configurations
- demonstrating knowledge of strategies for troubleshooting basic computer operating systems
- demonstrating knowledge of support resources and information for resolving technical problems

**0003 Understand equity, ethics, and etiquette issues associated with the use of technology in education.**

For example:

- demonstrating familiarity with equity, ethics, and etiquette issues
- demonstrating familiarity with issues of equity regarding computer use (e.g., students with special needs, students with limited English proficiency, students with different economic and social backgrounds)
- demonstrating knowledge of equity and ethics issues related to technology purchasing and policy decisions
- analyzing the historical development and important trends affecting the evolution of technology

**0004 Understand legal, privacy, security, and safety issues associated with the use of technology in education.**

For example:

- demonstrating knowledge of legal, privacy, security, and safety issues related to technology purchasing and policy decisions
- demonstrating knowledge of acceptable use policies for school-owned technology resources (e.g., publishing the names and photographs of minors, appropriate use of chat rooms and computer-mediated conversations)
- demonstrating knowledge of methods for protecting students from inappropriate information and interactions associated with the use of technology
- demonstrating an understanding of liability issues related to piracy, plagiarism, unauthorized access, and/or vandalism of software
- demonstrating knowledge of copyright laws related to the use of computers, software, and technology
- demonstrating knowledge of how to appropriately cite electronic sources
- demonstrating knowledge of health issues related to the use of computers (e.g., eyestrain, repetitive stress injuries)

## **SUBAREA II—PROFESSIONAL APPLICATIONS OF TECHNOLOGY**

### **0005 Understand the advanced features of technology-based productivity tools.**

For example:

- demonstrating familiarity with the advanced features of word-processing, desktop publishing, graphics programs, and utilities to develop products
- demonstrating knowledge of how to use spreadsheets for analyzing, organizing, and displaying numerical data
- demonstrating knowledge of how to design and manipulate databases and generate customized reports
- demonstrating knowledge of multimedia, hypermedia, and Web-based publishing
- demonstrating familiarity with teacher utility and classroom management tools
- demonstrating knowledge of how to identify, select, integrate, present, and publish video and digital images
- demonstrating familiarity with specific-purpose electronic devices (e.g., graphing calculators, language translators, scientific probeware)

### **0006 Understand the features and uses of telecommunication, information access, and delivery systems.**

For example:

- demonstrating knowledge of how to use telecommunication tools for information access, retrieval, and sharing
- demonstrating familiarity with the use of electronic mail and Web browser applications
- demonstrating knowledge of advanced online search techniques for identifying and indexing information resources
- demonstrating knowledge of a variety of distance learning delivery systems (e.g., computer, audio, and video conferencing)

### **0007 Understand the use of computers and other technologies in research, problem-solving, and product development.**

For example:

- demonstrating knowledge of principles of instructional design associated with the development of multimedia and hypermedia learning materials
- demonstrating knowledge of age- and grade-level appropriate computer-based technology tools for communicating concepts, conducting research, and solving problems for an intended audience and purpose
- demonstrating familiarity with strategies for creating and/or incorporating collaborative online workgroups into instruction to construct and share knowledge
- demonstrating knowledge of how to develop instructional units supported by technology that involve compiling, organizing, analyzing, and synthesizing information

**0008 Understand methods and strategies for planning, delivering, and assessing concepts and skills relevant to educational computing and technology literacy across curricula.**

For example:

- demonstrating knowledge of methods and strategies for teaching concepts and skills related to computers and associated technologies
- demonstrating knowledge of methods and strategies for teaching concepts and skills for applying productivity, information access, and delivery tools
- demonstrating knowledge of methods and strategies for teaching problem-solving skills using technology resources
- demonstrating knowledge of methods and strategies for evaluating the effectiveness of instructional units that integrate computers and technology

**SUBAREA III—INTEGRATING TECHNOLOGY INTO EDUCATION**

**0009 Understand educational and technology-related research.**

For example:

- applying principles and practices of educational research in educational technology
- demonstrating familiarity with major research findings and trends related to the use of technology in education to support the integration of technology in the educational environment
- demonstrating knowledge of learning and teaching theories and instructional design, and their relationship to the use of technology in the educational environment
- demonstrating knowledge of the social and historical foundations of the use of technology in education
- identifying research related to equity issues concerning access and use of computers and related technologies in education

**0010 Understand principles of instructional design and product development.**

For example:

- demonstrating knowledge of how to incorporate technology into curriculum development in alignment with state and national content standards
- demonstrating an understanding of criteria for evaluating instructional materials (e.g., alignment with content standards, student needs, ease of use, presentation features, authoring capability, ease of navigation, media integration, search strategies, instructional support)
- demonstrating knowledge of design principles for developing instructional materials (e.g., the design of screens, text, graphics, audio, and video)
- demonstrating familiarity with methods for the assessment and evaluation of instructional products
- demonstrating knowledge of how to apply instructional design principles for the development of substantive interactive multimedia computer-based instructional products

**0011 Understand factors involved in creating and maintaining effective learning environments using technology.**

For example:

- demonstrating knowledge of how to plan learning activities to include appropriate technology resources for students of diverse backgrounds and needs (e.g., prior knowledge, cultural and linguistic backgrounds)
- demonstrating an understanding of how to design, implement, and assess student learning activities that integrate computers and technology
- demonstrating knowledge of how to adapt or modify computer-based presentations for diverse student populations
- demonstrating familiarity with adaptive techniques and assistive devices for students
- demonstrating familiarity with methods for developing and adapting lessons to fit the classroom and the available technology (e.g., one versus multiple computers, networked versus stand-alone computers)
- demonstrating knowledge of how to manage computer technology activities along with other classroom activities



**0012 Understand issues relating to software and hardware selection, installation, and maintenance in the educational environment.**

For example:

- demonstrating an understanding of how to select effective technological resources appropriate to New York State Learning Standards, instructional objectives, and grade level
- identifying software used in classroom and administrative settings (e.g., productivity tools, information access and telecommunication tools, multimedia and hypermedia tools, school management tools, evaluation and portfolio tools, computer-based instruction)
- demonstrating knowledge of procedures for acquiring administrative and instructional software for various educational purposes
- demonstrating knowledge of evaluation criteria for software (e.g., support of content standards and instructional design, clarity of objectives, scope and scale, quantity of useful information, logical development and organization, appropriate reading and vocabulary levels, identification of bias or distortion of information), and identifying reliable sources of software evaluations

**SUBAREA IV—TECHNOLOGY LEADERSHIP AND RESOURCE MANAGEMENT**

**0013 Understand methods and strategies for the use of computers and other technologies in developing and implementing instructional programs.**

For example:

- demonstrating knowledge of strategic planning to facilitate curriculum development for teaching with computers and related technologies
- identifying national and state guidelines for integrating technology in the educational environment (e.g., National Education Technology Standards)
- evaluating the use of technology in the classroom and demonstrating knowledge of strategies for revising instruction when necessary
- demonstrating the ability to assume a leadership role in incorporating technology in the educational environment
- demonstrating familiarity with methods for promoting the awareness of emerging technologies

**0014 Understand methods and strategies for designing, implementing, and evaluating educational technology professional development programs.**

For example:

- demonstrating knowledge of professional organizations, groups, resources, and activities to support regular professional growth related to technology
- demonstrating knowledge of important factors to consider when designing educational technology professional development programs
- demonstrating knowledge of the steps necessary to design, implement, and evaluate educational technology professional development programs
- recognizing the importance of creating individualized professional development plans
- demonstrating knowledge of models for formal and informal educational technology professional development (e.g., providing in-classroom support, just-in-time training, job-embedded activities, peer-to-peer coaching, workshops)

**0015 Understand issues related to facilities and resource management.**

For example:

- demonstrating knowledge of budget planning and management procedures (e.g., prioritizing needs) related to educational computing and technology facilities and resources
- identifying funding sources available at local, state, and national levels and methods for developing grant proposals
- demonstrating knowledge of procedures (including ethical and legal issues) for resource acquisition and management of technology-based systems including hardware and software
- demonstrating knowledge of procedures for staffing, scheduling, and maintaining security with regard to the use of computers and technology in a variety of educational environments

**0016 Understand issues relating to and strategies for managing the change process in the educational environment.**

For example:

- demonstrating knowledge of change process issues in the educational environment
- demonstrating knowledge of procedures for evaluating school and district technology plans
- applying evaluation findings to recommend modifications in technology implementations
- demonstrating knowledge of issues relating to building collaborations, alliances, and partnerships involving educational technology initiatives
- demonstrating knowledge of effective group process and interpersonal skills

**SUBAREA V—INTEGRATING TECHNOLOGY INTO EDUCATION:  
CONSTRUCTED-RESPONSE ASSIGNMENT**

The content to be addressed by the constructed-response assignment is described in Subarea III, Objectives 9–12.

## ■ MULTIPLE-CHOICE SECTION

This preparation guide provides sample multiple-choice questions and a sample written assignment for the test. The multiple-choice questions illustrate the objectives of the test—one sample question for each objective. For objective 16, a passage and two questions are provided.

Three pieces of information are presented for each test question:

1. the number of the test objective that the sample question illustrates,
2. a sample test question,
3. an indication of the correct response and an explanation of why it is the best available response.

Keep in mind when reviewing the questions and response options that there is one best answer to each question. Remember, too, that each explanation offers one of perhaps many perspectives on why a given response is correct or incorrect in the context of the question; there may be other explanations as well.

On the following page are sample test directions similar to those that candidates see when they take the test.

# SAMPLE TEST DIRECTIONS FOR MULTIPLE-CHOICE QUESTIONS

## DIRECTIONS

This test booklet contains a multiple-choice section and a section with a single written assignment. You may complete the sections of the test in the order you choose.

Each question in the first section of this booklet is a multiple-choice question with four answer choices. Read each question CAREFULLY and choose the ONE best answer. Record your answer on the answer document in the space that corresponds to the question number. Completely fill in the space that has the same letter as the answer you have chosen. *Use only a No. 2 lead pencil.*

- Sample Question:      1.    What is the capital of New York?
- A.    Buffalo
  - B.    New York City
  - C.    Albany
  - D.    Rochester

The correct answer to this question is C. You would indicate that on the answer document as follows:

1.    (A)   (B)   ●   (D)

You should answer all questions. Even if you are unsure of an answer, it is better to guess than not to answer a question at all. You may use the margins of the test booklet for scratch paper, but you will be scored only on the responses on your answer document.

The directions for the written assignment appear later in this test booklet.

**FOR TEST SECURITY REASONS, YOU MAY NOT TAKE NOTES OR REMOVE ANY OF THE TEST MATERIALS FROM THE ROOM.**

The words "End of Test" indicate that you have completed the test. You may go back and review your answers, but be sure that you have answered all questions before raising your hand for dismissal. Your test materials must be returned to a test administrator when you finish the test.

If you have any questions, please ask them now before beginning the test.



DO NOT GO ON UNTIL YOU ARE TOLD TO DO SO.

# SAMPLE MULTIPLE-CHOICE QUESTIONS, CORRECT RESPONSES, AND EXPLANATIONS



## Objective 0001

Understand basic computer operations, concepts, and care.

---

1. A computer's operating system is responsible for performing which of the following tasks?
    - A. virus detection
    - B. data compression
    - C. disk defragmentation
    - D. memory management
- 

Correct Response: D. The operating system of a computer controls and coordinates the computer's data transfer, disk operating system, and peripheral devices. The operating system also manages allocation of memory used by drivers and software applications.



## Objective 0002

Understand basic troubleshooting techniques for computer systems and related peripheral devices.

---

2. Which of the following is the first action to take when a printer is not receiving a print command?
- A. Check the computer's default printer settings.
  - B. Realign the printer's print heads.
  - C. Replace the printer's ink cartridges.
  - D. Reset the printer's printing properties.
- 

Correct Response: A. There are a number of reasons that a printer might not respond to a print command. Of the choices listed, checking the computer's default printer settings is the easiest option and is a common reason for a lack of response by a printer to a print command. It should therefore be checked first.



### Objective 0003

Understand equity, ethics, and etiquette issues associated with the use of technology in education.

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3. The emergence of file formats capable of compressing large amounts of information for easy transmission has most significantly contributed to which of the following technology-related concerns?
- A. the protection of intellectual property rights
  - B. the prevention of computer hacking
  - C. the protection of the right to free speech
  - D. the prevention of software piracy
- 

Correct Response: A. The emergence of file compression technology has made it easy for individuals to copy and distribute the intellectual property of others. Compression software reduces the size of large files so that they require less time to download and they take up less room on computer hard drives. This has led to an increase in the number of compressed files of movies, songs, software, and other copyrighted works being shared by individuals without the permission of the owners of those intellectual properties.





### **Objective 0004**

Understand legal, privacy, security, and safety issues associated with the use of technology in education.

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4. According to current software copyright laws, it is permissible to copy software designed for personal computers:
    - A. only for educational purposes.
    - B. only if the software was purchased with a multiple user or site license.
    - C. only for archival purposes.
    - D. only if the copies are not resold by the original purchaser.
- 

Correct Response: C. According to Chapter one, Section 117 of the copyright laws of the United States, an individual may make an archival copy of a computer program for which that person holds a license. The archival copy may be used only for the maintenance or repair of the original machine running the software.



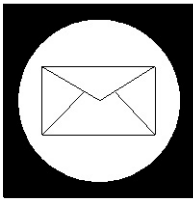
## Objective 0005

Understand the advanced features of technology-based productivity tools.

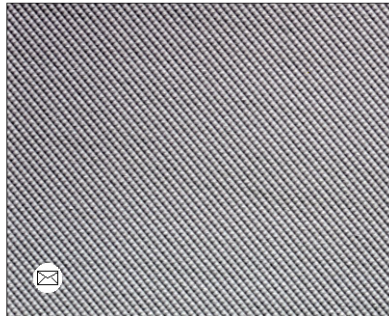
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5. Use the images below to answer the question that follows.

Downloaded  
clip art image



Web page with image  
used as a button



A student is creating a Web page with a textured background and has downloaded a clip art image of an envelope to use as a button on the page. The clip art image file and a sketch of how the image is to appear on the Web page are shown above. In which of the following ways should the student modify the clip art image so that it appears on the Web page as illustrated?

- A. Crop the image so that anything outside of the white circle is deleted and save it as a JPEG file.
- B. Set the background color outside the circle to be transparent and save the image as a GIF file.
- C. Paste the envelope and surrounding circle into the textured background image and save it as a JPEG file.
- D. Fill the space outside of the circle with the background texture and save the image as a GIF file.

---

Correct Response: B. Graphics used on Web pages are usually stored as rectangular images. In order to present a graphic image with a round outline shape, it is necessary to make part of the image transparent. The GIF format for images allows the user to create transparent areas in an image. Making the black area outside the white circle transparent will make the clip art envelope appear as intended.



### Objective 0006

Understand the features and uses of telecommunication, information access, and delivery systems.

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6. Which of the following is the correct Boolean entry to use when searching for two terms appearing on the same page?
- A. AND
  - B. OR
  - C. PLUS
  - D. NOT
- 

Correct Response: A. Boolean search commands are used to specify relationships between search terms. The Boolean AND command uses the syntax ***term1 AND term2*** and is used to search for Web pages that contain both term1 and term2 on the same page.



### Objective 0007

Understand the use of computers and other technologies in research, problem-solving, and product development.

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7. A middle school science teacher is preparing a lesson on the relationship between solar flare activity and global weather patterns. The students will work in groups to research the relationship and present their results to the class. Which of the following would be the most age-appropriate activity for the teacher to include in the lesson?
- A. Have the students use the graphing functions of a spreadsheet application to present their data.
  - B. Have the students access articles from an encyclopedia on CD-ROM.
  - C. Have the students use the Internet to access and analyze articles from online scientific journals.
  - D. Have the students create a database to perform statistical analyses on their data.
- 

Correct Response: A. Spreadsheet software is an excellent tool for recording and organizing numerical data and is appropriate for students of middle school age. The graphing capabilities of the spreadsheet software make it easy for the students to analyze data, discover relationships in the data, and present the results of their analysis to other members of the class.



### **Objective 0008**

Understand methods and strategies for planning, delivering, and assessing concepts and skills relevant to educational computing and technology literacy across curricula.

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8. Which of the following strategies will best help students understand how files and folders are organized in a computer?
- A. explaining the significance of the various file name extensions
  - B. having students create folders and move files into them
  - C. explaining how files are physically stored on the hard drive
  - D. having students create files and save them to another storage medium
- 

Correct Response: B. Many computing topics and techniques are more easily understood through the use of a "hands-on" approach. Of the choices listed, only choice B requires students to create and manipulate the contents of folders themselves.



## Objective 0009

Understand educational and technology-related research.

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9. Use the chart below to answer the question that follows.

Line	Former Teaching Behavior	Current Teaching Behavior
1	small-group instruction	whole-class instruction
2	cooperative social structures	competitive social structures
3	lecture and recitation	coaching
4	students learning different things	students learning the same thing

Which of the following lines correctly illustrates the shift in teaching behavior attributed to the increasing use of technology in the classroom?

- A. Line 1
  - B. Line 2
  - C. Line 3
  - D. Line 4
- 

Correct Response: C. The effective use of technology in the classroom leads to more individualized learning with less emphasis on large-group instruction. Students working with computers and other technologies tend to work in small groups, with a partner, or alone. As students spend more time learning through the use of technology, less time is given to lecture and the teacher's role changes from instructor to coach.



## Objective 0010

Understand principles of instructional design and product development.

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10. For a facilitator responsible for providing technology-integrated lessons for an entire district, the most important consideration to make when designing curriculum to meet instructional goals should be the:
- A. teachers' interest levels in technology.
  - B. adaptability of lessons.
  - C. teachers' proficiency levels in technology.
  - D. originality of lessons.
- 

Correct Response: B. Instructional goals change dramatically across grade levels as students develop their intellectual skills and understandings. In addition, there is often a wide range of academic abilities within each grade level. For this reason, a facilitator must make adaptability a characteristic of all technology-integrated lessons designed for the district's teachers.



### **Objective 0011**

Understand factors involved in creating and maintaining effective learning environments using technology.

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11. A teacher wants to assess the effectiveness of a unit that required the use of Internet research skills. Which of the following activities would be most useful for this purpose?
- A. having a class debate about the best ways to locate relevant information on the Internet
  - B. reviewing the computers' browser histories to determine the Web sites accessed during the unit
  - C. giving students a quiz on Internet research techniques
  - D. having students explain the process through which they created their final products
- 

**Correct Response:** D. The unit described in the question involves the application of research and Internet skills. To assess the effectiveness of the unit, it would be most helpful for the teacher to determine what processes and skills the students actually used in creating their final products and the decisions they made as they went along. Of the choices listed, the activity described in response D is the most direct way of determining the processes and skills students used in completing their assignments.





## Objective 0012

Understand issues relating to software and hardware selection, installation, and maintenance in the educational environment.

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12. A school's decision to upgrade to a new version of software should be based primarily upon:
- A. the need to own the most recent software.
  - B. an analysis of added benefits versus the cost of the software.
  - C. the number of potential users of the new software.
  - D. how long the current software has been in use.
- 

Correct Response: B. In choosing software, school personnel operating with limited budgets must consider the added benefits each software package offers, weigh those benefits against the additional cost of the software, and compare the benefits to other uses to which the available funds might be put. The school can then make a final purchasing decision based on an assessment of the benefits offered against the additional cost of those benefits.



### Objective 0013

Understand methods and strategies for the use of computers and other technologies in developing and implementing instructional programs.

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13. An educational technology specialist is planning a workshop to help a group of social studies teachers learn ways in which to integrate technology into their lessons. For teachers to get the greatest benefit from this workshop, it would be most useful for the educational technology specialist to:
- A. provide participants with a file of lesson plans that provide examples of cases where teachers have successfully incorporated technology into their teaching.
  - B. demonstrate the various kinds of hardware and software that are currently available at their school and describe their functions and capabilities.
  - C. distribute a list of various technological tools the participants might find useful.
  - D. survey the participants ahead of time about upcoming lessons so that they can work together on ways to incorporate technology into specific lesson plans.
- 

Correct Response D. A workshop to help teachers integrate technology into their curriculum is most likely to be effective if it addresses the needs of the participating teachers. Surveying the teachers ahead of time about upcoming lessons is an effective means of determining how to tailor the workshop to provide immediate benefits to the workshop participants.



### Objective 0014

Understand methods and strategies for designing, implementing, and evaluating educational technology professional development programs.

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14. Peer-to-peer coaching is a valuable component of educational technology professional development programs primarily because it:
- A. provides a reliable method for informal evaluation of teachers' ability to use educational technology.
  - B. offers teachers the chance to receive expert one-on-one training and assistance customized to their individual needs.
  - C. provides teachers with a source of technical expertise, support, and advice based on their immediate needs.
  - D. helps establish a community of teachers who use educational technology and provide feedback and support for each other.
- 

Correct Response: D. Teachers often consult their peers to solve common, everyday problems that confront them. Many teachers see this kind of support network as a non-threatening system for quickly finding solutions to technology-related problems. Although peers may not have technical expertise, their advice is often sufficient for solving the problem at hand while at the same time providing the teacher with support and feedback from colleagues.



## Objective 0015

Understand issues related to facilities and resource management.

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15. A school district with limited resources has hired an educational technology specialist to work in the district's three small elementary schools. One of the specialist's responsibilities is to maintain the schools' computer networks. Given the limited amount of time the technology specialist will have in each school, which of the following measures is most appropriate for the specialist to take with regard to network problems?
- A. requesting that a trained staff person be present at all times in each of the schools' computer labs so that problems are less likely to occur
  - B. giving all of the teachers administrator-level access to the network so that any teacher can deal with problems when they arise
  - C. training an individual or group of individuals on the first steps to take to resolve a problem before calling the technology specialist
  - D. ensuring that staff members know how to reach the technology specialist at all times so that he or she can deal with the problem as soon as possible
- 

Correct Response: C. Small problems related to networks can be expected to arise on a regular basis. Often these problems can be solved by teachers who have been trained in simple troubleshooting techniques. This system allows educational technology specialists to use their expertise to solve more serious, technical problems and to devote more of their time and energy to the integration of technology into the curriculum.



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**Use the information below to answer the two questions that follow.**

A public school in New York is developing an Educational Technology Improvement Team, which will be led by the school's principal and the educational technology specialist. The team will include teachers, staff, and parents, as well as members of the local business community, all of whom will work together in partnership to guide the school through the improvement process. Members of the team will attend regular meetings to help design and implement a five-year strategic plan to improve the school's access to and use of educational technology.



## Objective 0016

Understand issues relating to and strategies for managing the change process in the educational environment.

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16. For the partnerships established within the Educational Technology Improvement Team to be successful, it is most important that:
- A. the roles, responsibilities, and expectations of each team member are clearly defined.
  - B. each team member agrees to participate in a minimum number of meetings.
  - C. team members receive public recognition for their contributions.
  - D. each team member be allowed to speak publicly for the group.
- 

Correct Response: A. This Educational Technology Improvement Team has members from a wide range of backgrounds. Each team member brings a different perspective and expertise to the discussions. In order for their collaboration to be efficient and productive, and to avoid conflicts and misunderstandings, it is important that the roles, responsibilities, and expectations of each team member are defined in advance.



## Objective 0016

Understand issues relating to and strategies for managing the change process in the educational environment.

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17. When considering potential Educational Technology Improvement Team members from the business community, it is most important for the school to ask which of the following questions?
- A. Will teachers, staff, and parents be responsive to the advice and direction given by the potential team member?
  - B. Is the potential team member likely to make significant financial contributions in addition to giving his or her time and expertise?
  - C. Will the school's partnership with the potential team member be supported by the larger business community?
  - D. Is the potential team member willing to make a long-term commitment to the improvement process?
- 

Correct Response: D. Regular meetings over a five-year period require a significant time commitment. Business community members may have demands on their time that prevent them from participating in these meetings. Candidates should be informed of the commitment that will be required and asked to reflect on their ability to meet that commitment before joining the team.

## ■ WRITTEN ASSIGNMENT SECTION

On the following pages are:

- ▶ Sample test directions for the written assignment section
- ▶ A sample written assignment
- ▶ An example of a strong response to the assignment
- ▶ The performance characteristics and scoring scale
- ▶ An evaluation of the strong response

On the actual test, candidates will be given a different written assignment from the one provided as a sample in this preparation guide.



# ■ SAMPLE TEST DIRECTIONS FOR THE WRITTEN ASSIGNMENT

## DIRECTIONS FOR THE WRITTEN ASSIGNMENT

This section of the test consists of a written assignment. You are to prepare a written response of about 150–300 words on the assigned topic. ***The assignment can be found on the next page.*** You should use your time to plan, write, review, and edit your response to the assignment.

Read the assignment carefully before you begin to write. Think about how you will organize your response. You may use any blank space provided on the following pages to make notes, write an outline, or otherwise prepare your response. ***However, your score will be based solely on the response you write on the lined pages of your answer document.***

Your response will be evaluated on the basis of the following criteria.

- **PURPOSE:** Fulfill the charge of the assignment.
- **APPLICATION OF CONTENT:** Accurately and effectively apply the relevant knowledge and skills.
- **SUPPORT:** Support the response with appropriate examples and/or sound reasoning reflecting an understanding of the relevant knowledge and skills.

Your response will be evaluated on the criteria above, not on writing ability. However, your response must be communicated clearly enough to permit valid judgment of your knowledge and skills. The final version of your response should conform to the conventions of edited American English. This should be your original work, written in your own words, and not copied or paraphrased from some other work.

Be sure to write about the assigned topic. Please write legibly. You may not use any reference materials during the test. Remember to review what you have written and make any changes that you think will improve your response.

# ■ SAMPLE WRITTEN ASSIGNMENT

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## WRITTEN ASSIGNMENT

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**Read the information below; then complete the exercise that follows.**

A fifth-grade classroom teacher is preparing a lesson on the solar system and space travel. The lesson will include the characteristics, relative positions, and movements of the planets and the history of the space program. The teacher asks the educational technology specialist for ideas on how to integrate technology into this lesson. Using your knowledge of educational technology, write an essay in which you:

- identify one technological application that can provide an educational benefit in the given situation;
- discuss why the technological application that has been identified is appropriate (e.g., instructional support, cost, ease of use, availability, training requirements, technical considerations);
- describe a plan for integrating and implementing the technological application in the given situation; and
- explain why the technological application is educationally appropriate and will support the student learning process.

## ■ STRONG RESPONSE TO THE SAMPLE WRITTEN ASSIGNMENT

A multimedia presentation is a great way to present content—especially with topics that are hard to simulate in the school lab, such as the solar system and space travel. Displaying text, colorful graphics, audio, animation, and video all within one presentation is immensely useful for getting fifth-grade students to understand these concepts.

There are several software programs available for this task, and to choose one over another, ease of use, cost, and support seem to be of paramount importance. Although I often prefer to use other programs for myself, Microsoft PowerPoint is, for most teachers, an easy to use and accessible application. There is also a significant amount of help available, either online or through the program's own help menu.

PowerPoint infrastructure supports sound and motion, so teachers are free to select materials that not only "inform," but also "show." For instance, movement—a critical concept in understanding the interactions of our planets—can be effectively demonstrated via animation or computer simulations, which are certain to capture the attention of fifth graders. A chronological presentation of space flights could contrast old photos, scratchy audio recordings, and early black-and-white film footage with more recent satellite transmissions from newer shuttles and the space station.

Multimedia presentations also allow teachers to teach to different types of learners. Some students can learn about a subject just by listening to a teacher talk or by reading books, but others do not. Many students respond best to information presented orally, through radio clips or voice-overs; visually, through charts, graphs, and pictures; and/or a combination of both.

PowerPoint is accessible, well-supported, and easy to use. For these reasons, and because it allows a variety of media to be integrated into one presentation that appeals to a range of students with different learning styles, I strongly recommend the use of multimedia technology for this lesson.

# PERFORMANCE CHARACTERISTICS AND SCORING SCALE

## Performance Characteristics

The following characteristics guide the scoring of responses to the written assignment.

<b>Purpose:</b>	Fulfill the charge of the assignment.
<b>Application of Content:</b>	Accurately and effectively apply the relevant knowledge and skills.
<b>Support:</b>	Support the response with appropriate examples and/or sound reasoning reflecting an understanding of the relevant knowledge and skills.

## Scoring Scale

Scores will be assigned to each response to the written assignment according to the following scoring scale.

<b>Score Point</b>	<b>Score Point Description</b>
<b>4</b>	<p><b>The "4" response reflects a thorough command of the relevant knowledge and skills.</b></p> <ul style="list-style-type: none"> <li>• The response completely fulfills the purpose of the assignment by responding fully to the given task.</li> <li>• The response demonstrates an accurate and highly effective application of the relevant knowledge and skills.</li> <li>• The response provides strong support with high-quality, relevant examples and/or sound reasoning.</li> </ul>
<b>3</b>	<p><b>The "3" response reflects a general command of the relevant knowledge and skills.</b></p> <ul style="list-style-type: none"> <li>• The response generally fulfills the purpose of the assignment by responding to the given task.</li> <li>• The response demonstrates a generally accurate and effective application of the relevant knowledge and skills.</li> <li>• The response provides support with some relevant examples and/or generally sound reasoning.</li> </ul>
<b>2</b>	<p><b>The "2" response reflects a partial command of the relevant knowledge and skills.</b></p> <ul style="list-style-type: none"> <li>• The response partially fulfills the purpose of the assignment by responding in a limited way to the given task.</li> <li>• The response demonstrates a limited, partially accurate and partially effective application of the relevant knowledge and skills.</li> <li>• The response provides limited support with few examples and/or some flawed reasoning.</li> </ul>
<b>1</b>	<p><b>The "1" response reflects little or no command of the relevant knowledge and skills.</b></p> <ul style="list-style-type: none"> <li>• The response fails to fulfill the purpose of the assignment.</li> <li>• The response demonstrates a largely inaccurate and/or ineffective application of the relevant knowledge and skills.</li> <li>• The response provides little or no support with few, if any, examples and/or seriously flawed reasoning.</li> </ul>

## ■ EVALUATION OF THE STRONG RESPONSE

This response is considered a strong response because it reflects a thorough command of relevant knowledge and skills.

**Purpose.** The candidate completely fulfills all four tasks associated with this assignment. The technological application chosen was a multimedia presentation using Microsoft PowerPoint, chosen because "it is an easy to use and accessible application" and there is "a significant amount of help available." The candidate included several examples of integrating and implementing this application into the lesson, and noted the appropriateness of multimedia for all different types of learners.

**Application of Content.** The response demonstrates accurate and highly effective application of knowledge through its discussion of educational technology. For instance, the candidate correctly notes the educational benefit of multimedia presentations: planetary movement can be demonstrated via animation or simulation, differences between current and past space travel can be made readily apparent, and presenting information through multiple, versus singular, modes is quite effective.

**Support.** The response supports why the technological application (Microsoft PowerPoint) was selected: easy to use, accessible, and at least two sources of help. It also gave several suggestions as to what types of media can be used within the lesson (radio clips, voice-overs, charts, graphs and pictures, animation with sound, video, etc.) as well as ideas on how that type of media might be integrated in the lesson (chronological presentation of space flights from old photos, scratchy audio recordings, and grainy black-and-white footage of the earliest explorations, as well as more recent satellite transmissions).