Fundamentals of Technology

Study Guide

Assessment:

0901 Fundamentals of Technology

Aligned with Certiport's
IC³ Global Standard 5

Overview

This study guide is designed to help students prepare for the Fundamentals of Technology assessment. It not only includes information about the assessment, but also the skills standards upon which the assessments are based and test taking strategies.

Each of the four sections in this guide provides useful information for students preparing the Fundamentals of Technology assessment.

- CareerTech and Competency-Based Education: A Winning Combination

- Fundamentals of Technology assessment

    ► Assessment Information

    ► Standards and Test Content

    ► Sample Questions

    ► Abbreviations, Symbols, and Acronyms

- Strategies for Test Taking Success

- Notes

This assessment is aligned with Certiport's (a Pearson Vue Business) IC^3 Global Standard 5 (GS5). The Internet and Computing Core (IC³) credential provides an in-depth and dynamic standard and testing program on which to develop educational programs for broad-based Internet and computing skills. The purpose of the certification is to provide students and job seekers with the educational/training foundation to succeed not only in technical careers, but also in any field or job position requiring the use of computers.

Certiport: **www.certiport.com**

CareerTech and Competency-Based Education:
A Winning Combination

Competency-based education uses learning outcomes that emphasize both the application and creation of knowledge and the mastery of skills critical for success. In a competency-based education system, students advance upon mastery of competencies, which are measurable, transferable outcomes that empower students.

Career and technology education uses industry professionals and certification standards to identify the knowledge and skills needed to master an occupation. This input provides the foundation for development of curriculum, assessments and other instructional materials needed to prepare students for wealth-generating occupations and produce comprehensively trained, highly skilled employees demanded by the work force.

Tools for Success

CareerTech education relies on three basic instructional components to deliver competency-based instruction: skills standards, curriculum materials, and competency assessments.

Skills standards provide the foundation for competency-based instruction and outline the knowledge and skills that must be mastered in order to perform related jobs within an industry. Skills standards are aligned with national skills standards and/or industry certification requirements; therefore, a student trained to the skills standards is equally employable in local, state and national job markets.

Curriculum materials and textbooks contain information and activities that teach students the knowledge and skills outlined in the skills standards. In addition to complementing classroom instruction, curriculum resources include supplemental activities that enhance learning by providing opportunities to apply knowledge and demonstrate skills.

Certification Assessments test the student over material outlined in the skills standards and taught using the curriculum materials and textbooks. When used with classroom performance evaluations, certification assessments provide a means of measuring occupational readiness.ess.

Each of these components satisfies a unique purpose in competency-based education and reinforces the knowledge and skills students need to gain employment and succeed on the job.

Measuring Success

Evaluation is an important component of competency-based education. Pre-training assessments measure the student's existing knowledge prior to receiving instruction and ensure the student's training builds upon this knowledge base. Formative assessments administered throughout the training process provide a means of continuously monitoring the student's progress towards mastery.

Certification assessments provide a means of evaluating the student's mastery of knowledge and skills. Coaching reports communicate assessment scores to students and provide a breakdown of assessment results by standard area. The coaching report also shows how well the student has mastered skills needed to perform major job functions and identifies areas of job responsibility that may require additional instruction and/or training.

Fundamentals of Technology
Assessment Information

What is the Fundamentals of Technology assessment?

The Fundamentals of Technology assessment is an end-of-course assessment for students in the Fundamentals of Technology course. The assessment provides an indication of student mastery of basic knowledge and concepts necessary for success in this area.

How was the assessment developed?

The assessment was developed by the CareerTech Testing Center. Items were developed and reviewed by a committee of subject matter experts.

What does the assessment cover?

Specifically, the tests include multiple-choice test items over the following areas:

Fundamentals of Technology (55 questions)

Mobile Devices	5%
Introduction to App Culture	2%
Hardware Devices	5%
Computer Software	5%
Backup and Restore	2%
File Sharing	2%
Cloud Computing	4%
Security	7%
Common Application Features	11%
Word Processing Activities	9%
Spreadsheet Activities	11%
Database Activities	2%
Presentation Activities	5%
Introduction to Digital Media	2%
Online Functionality	9%
Introduction to Webpage Development	2%
Smart Technology	2%
Introduction to Programming	2%
Introduction to Leadership	2%
Introduction to Employment Process	7%
Employability Skills	4%

What are the benefits of using this assessments?

Students receive a certificate for each assessment that he/she passes. This certificate may be included in his/her portfolio and used to communicate the student's mastery of the subject matter to potential employers.

When should the assessment be taken?

The CareerTech Testing Center recommends that students take these assessments as soon as possible after receiving all standards-related instruction, rather than waiting until the end of the school year.

Is the assessment timed?

No. However, most students finish the assessment within one hour.

What resources can students use on these assessments?

Students are allowed to use calculators and scratch paper on CTTC assessments; however, these items must be provided by the testing proctor and returned to the proctor before the student's exam is submitted for scoring. Calculator apps on cell phones and other devices may not be used on these assessments.

What accommodations can be made for students with Individualized Education Plans (IEPs)?

Accommodations are allowed for students with an Individualized Education Plan. Examples of allowable accommodations include:

- Extended time — This assessment is not timed; therefore, students may take as much time as needed to finish. The assessment must be completed in one testing session.

- Readers — A reader may be used to read the assessment to a student who has been identified as needing this accommodation.

- Enlarged text — Students needing this accommodation can activate this feature by clicking the AA icon in the upper right corner of the screen.

What can students expect on Test Day?

All CTTC assessments are web-based and delivered exclusively by a proctor in the school's assessment center. The proctor **cannot** be an instructor or anyone who was involved with the students during instruction.

Assessments are delivered in a question-by-question format. When a question is presented, the student can select a response or leave the question unanswered and advance to the next question. Students may also flag questions to revisit before the test is scored. All questions must be answered before the test can be submitted for scoring.

After the assessment is scored, the student will receive a score report that not only shows the student's score on the assessment, but also how the student performed in each standard area.

Can students retake the test?

Students may retake the test unless their school or state testing policies prohibit retesting. Students who can retest must wait at least three days between test attempts.

Standards and Test Content

Computing Fundamentals

Duty A: Mobile Devices (3 questions)
1. Classify cellular phone connections and carriers (1/3)
2. Compare cellular vs. Wi-Fi-enabled devices and connection limitations (1/3)
3. Understand smart phone functions and limitations (3/3)
4. Understand the use of phones in a professional setting (3/3)
5. Differentiate between SMS and MMS text messaging and multiple platforms (1/1)
6. Configure location services and notifications (3/3)

Duty B: Introduction to App Culture (1 question)
1. Understand how apps are obtained (must have an account), app stores, purchasing apps with a credit card, in-app purchases, how to use an app store (2/2)
2. Identify different app types (3/3)
3. Compare strengths and limits of web applications vs. local applications (1/1)

Duty C: Hardware Devices (3 questions)
1. Identify types of devices (i.e. server, laptop, desktop, tablets, etc.) (1/2)
2. Identify impact of memory and storage for device usage (1/2)
3. Connect and use different peripherals: camera, audio, microphone, USB devices, printer, external display and necessary device ports (3/3)
4. Identify Ethernet usage (1/2)
5. Connect a wireless device to a network (Wi-Fi) (1/1)
6. Understand power management and power settings (1/1)
7. Understand driver concepts; as well as, their device compatibility and updates (1/2)
8. Compare platform implications and considerations (i.e. Mac, PC, Linux, iOS, Android, Firmware) (1/2)
9. Compare platform compatibility for cellular, Wi-Fi, and wired (1/3)
10. Understand concepts for connecting devices to the internet (1/2)
11. Understand common hardware configurations (1/1)
12. Compare the pros and cons of touch screens vs non-touch screen devices (1/1)

Duty D: Computer Software (3 questions)

1. Understand operating system versioning and update awareness (1/2)
2. Compare concepts surrounding applications vs. operating system vs. global settings (1/1)
3. Understand operating systems and software settings (1/2)
4. Understand software preferences/settings (1/1)
5. Understand users and profiles (2/3)
6. Understand file structures and file/folder management, including image files (3/3)
7. Navigate menu options (3/3)
8. Troubleshoot software issues (2/3)
9. Identify use of global positioning system (GPS) and geographic information system (GIS) in society (1/1)

Duty E: Backup and Restore (1 question)

1. Understand local data backup and restore functions (1/2)
2. Differentiate use of backup (find a lost file) and restore (fix settings) (1/2)
3. Understand steps to complete a full system restore on a personal device (1/2)

Duty F: File Sharing (1 question)

1. Understand ways to transfer files, attachments, links, shared folders, and compressed files (3/3)
2. Understand PDF usage for file sharing (1/3)

Duty G: Cloud Computing (2 questions)

1. Understand cloud concepts (3/3)
2. Identify benefits of using cloud storage (3/3)
3. Access and use the cloud to upload, download, and sync (3/3)
4. Differentiate web applications vs. local applications, including subscription services (3/3)

Duty H: Security (4 questions)

1. Understand basic account management (3/3)
2. Understand basic threats to the security of computers, data, and identity (3/3)
3. Understand implications of monitoring software (i.e. surveillance) (3/3)
4. Differentiate connecting to secured vs. unsecured network (i.e. wired and wireless) (3/3)
5. Understand importance of anti-virus software usage (3/3)
6. Understand firewalls and basic settings (3/3)
7. Identify e-commerce interactions and best purchasing practices (1/1)
8. Define virtual private networks (VPNs) (1/1)

Duty I: Common Application Features (6 questions)

1. Demonstrate copy, cut, and paste keyboard equivalents (3/3)
2. Compare differences between plain text and HTML (i.e. text with markup) (3/3)
3. Use spell check (3/3)
4. Use review features (3/3)
5. Demonstrate find/replace (3/3)
6. Select text or cells (3/3)
7. Demonstrate redo and undo (3/3)
8. Demonstrate drag and drop (3/3)
9. Understand read-only view (3/3)
10. Understand protected view (3/3)
11. Demonstrate magnification (3/3)

Duty J: Word Processing Activities (5 questions)

1. Perform basic formatting skills (3/3)
2. Adjust margins, page sizes, page orientation, and other page layout concepts (3/3)
3. Change text sizes and font styles (3/3)
4. Create and save files (3/3)
5. Print a document (3/3)
6. Understand print views (3/3)
7. Use review options (3/3)
8. Create tables (3/3)
9. Understand file types that are compatible or editable with word processors (3/3)

Duty K: Spreadsheet Activities (6 questions)

1. Understand common spreadsheet terms (2/3)
2. Insert/delete rows and columns (2/3)
3. Modify cell sizes (2/3)
4. Filter and sort data (2/3)
5. Understand functions, formulas, and operators (2/3)
6. Enter data (2/3)
7. Use and create charts (2/3)
8. Create tables (2/3)
9. Manipulate data (2/3)
10. Format data (2/3)
11. Understand print preview, print, and other page formatting (2/3)
12. Understand compatible spreadsheet file types
      (i.e. csv, xlsx, tab delimited) (2/3)
13. Use spreadsheet templates to increase productivity (2/3)
14. Understand use of a spreadsheet as a simple database (2/3)

Duty L: Database Activities (1 question)
1. Define data (1/1)
2. Understand how websites utilize databases (1/1)
3. Identify basic concepts of a relational database (1/1)
4. Define metadata (1/1)

Duty M: Presentation Activities (3 questions)
1. Understand file types compatible with presentation software (2/3)
2. Understand how to connect external/extended monitors to display presentation (2/3)
3. Use presentation views and modes (2/3)
4. Add animations, effects, and slide transitions (2/3)
5. Create and organize slides (2/3)
6. Design slides (2/3)
7. Identify presentation software options (2/3)

Duty N: Introduction to Digital Media (1 question)
1. Import and insert images into documents (3/2)
2. Crop images (2/2)
3. Identify different types of multimedia (i.e. print, film, video) (1/2)

Duty O: Online Functionality (5 questions)
1. Understand email basics (3/3)
2. Create calendar events and appointments (3/3)
3. Understand digital identity and cyber bullying in social media (3/3)
4. Understand best communication tools (3/3)
5. Understand virtual meeting options (2/2)
6. Demonstrate effective online searches (3/3)
7. Understand implications of copyright violations (3/3)
8. Identify virtual reality (VR) uses and applications (1/1)
9. Demonstrate appropriate internet etiquette (3/3)
10. Validate internet resources (2/2)
11. Research and validate new technologies (1/1)

Duty P: Introduction to Webpage Development (1 question)
1. Understand basic concepts of webpage development (1/3)
2. Understand HTML/CSS in webpage development (1/3)

Duty Q: Smart Technology (1 question)

1. Understand use of artificial intelligence (AI) in technology (1/3)
2. Define Internet of Things (IoT) as used to connect and operate devices (2/3)
3. Identify the ethical issues related to the use of smart technology (1/3)
4. Identify use of drones in society (1/2)

Duty R: Introduction to Programming (1 question)

1. Define algorithms (1/1)
2. Create a simple program (2/3)

Duty S: Introduction to Leadership (1 question)

1. Identify leader characteristics (i.e. ethics, intelligence, objectivity, initiative, accountability, dependability, cooperation, integrity, courage, confidence, stability, empathy, creativity, teamwork, responsibility, flexibility) (2/2)
2. Identify leadership styles (2/2)
3. Identify professional and community organizations (i.e. student organizations, civic organizations, professional organizations, social organizations) (2/2)
4. Participate in student organization activities and various projects on the local, state, and national levels (2/2)

Duty T: Introduction to Employment Process (4 questions)

1. Set occupational objectives (i.e. entrepreneurship, self-employment, full-time, part-time) (1/3)
2. Compose a letter of application (1/3)
3. Create a résumé and portfolio in hard copy and digital format (1/3)
4. Demonstrate knowledge of employment services (i.e. online searches, private, state, federal) (1/3)
5. Review potential interview questions and techniques (1/3)
6. Participate in pre-interview activities (i.e. mock interview, preparing questions for prospective employers) (1/3)
7. Participate in job interview (i.e. interview etiquette, application, appropriate dress, résumé, research company history) (1/3)
8. Complete post-interview activities (i.e. follow-up letter and inquiry call) (1/3)
9. Complete job acceptance (i.e. negotiate salary and benefits, complete benefits forms) (1/3)
10. Discuss legal issues (i.e. drug screen, discrimination, harassment) (1/3)
11. Identify career and training opportunities (i.e. networking, professional organizations, education requirements, salaries, labor market, career ladder, self-initiative, transfer skills and flexibility, functions/job levels of a company) (1/3)
12. Demonstrate knowledge of resignation, termination, and exit interview practices (1/3)

Duty U: Employability Skills (2 questions)

1. Demonstrate effective communication skills (2/3)
2. Demonstrate ability to present in front of a group (1/3)
3. Demonstrate time management skills (3/3)
4. Understand remote workforce implications (2/3)
5. Understand impact of multigenerational and diverse workforce (2/3)

Sample Questions

_____ 1. What method of internet searching uses "OR", "AND" and "NOT"?

    a. advanced search
    b. Boolean search
    c. spider search
    d. wildcard search

_____ 2. The science of adapting the working environment, conditions, and equipment to suit workers is known as:

    a. computer science.
    b. ergonomics.
    c. life science.
    d. workplace protocol.

_____ 3. The process of transferring data in a continuous and even flow, allowing users to access and use a file while transmitting is:

    a. channel coding.
    b. flowing.
    c. streaming.
    d. surfing.

_____ 4. Printer resolution is measured in:

    a. bits per inch (bpi).
    b. characters per inch (cpi).
    c. dots per inch (dpi).
    d. pixels per inch (ppi).

_____ 5. Which disk utility provides the best way to improve disk performance?

    a. CHKDSK
    b. DEFRAG
    c. FDISK
    d. SCANDISK

_____ 6. What is the default file extension for a Microsoft Excel file?

    a. DOC
    b. MDB
    c. PPT
    d. XLS

_____ 7. What is a benefit of being on a networked computer?

   a. files can be shared from a central location
   b. increased vulnerability to viruses
   c. loss of autonomy
   d. restricted access

_____ 8. Programs that perform housekeeping chores, such as file management and recovery, disk defragmentation, compression and backup, and virus detection are known as:

   a. application software.
   b. boot loaders.
   c. firmware.
   d. utility software.

_____ 9. In a word processing program, what menu allows the user to enter a date and time stamp that will automatically update each time the document is opened?

   a. Home
   b. Insert
   c. Page Layout
   d. Review

_____ 10. To undue a deletion in Excel, press:

   a. Esc.
   b. F5.
   c. Ctrl + g.
   d. Ctrl + z.

Sample Questions — Key

1. What method of internet searching uses "OR", "AND" and "NOT"?

   a. advanced search   Wrong, but plausible
   b. Boolean search   Correct
   c. spider search   Wrong, but plausible
   d. wildcard search   Wrong, but plausible

2. The science of adapting the working environment, conditions, and equipment to suit workers is known as:

   a. computer science.   Wrong, but plausible
   b. ergonomics.   Correct
   c. life science.   Wrong, but plausible
   d. workplace protocol.   Wrong, but plausible

3. The process of transferring data in a continuous and even flow, allowing users to access and use a file while transmitting is:

   a. channel coding   Wrong, but plausible
   b. flowing   Wrong, but plausible
   c. streaming   Correct
   d. surfing   Wrong, but plausible

4. Printer resolution is measured in:

   a. bits per inch (bpi).   Wrong, but plausible
   b. characters per inch (cpi).   Wrong, but plausible
   c. dots per inch (dpi).   Correct
   d. pixels per inch (ppi).   Wrong, but plausible

5. Which disk utility provides the best way to improve disk performance?

   a. CHKDSK   Wrong, but plausible
   b. DEFRAG   Correct
   c. FDISK   Wrong, but plausible
   d. SCANDISK   Wrong, but plausible

6. What is the default file extension for a Microsoft Excel file?

   a. DOC   Wrong, but plausible
   b. MDB   Wrong, but plausible
   c. PPT   Wrong, but plausible
   d. XLS   Correct

7. What is a benefit of being on a networked computer?

    a. files can be shared from a central location   Correct
    b. increased vulnerability to viruses   Wrong, but plausible
    c. loss of autonomy   Wrong, but plausible
    d. restricted access   Wrong, but plausible

8. Programs that perform housekeeping chores, such as file management and recovery, disk defragmentation, compression and backup, and virus detection are known as:

    a. application software.   Wrong, but plausible
    b. boot loaders.   Wrong, but plausible
    c. firmware.   Wrong, but plausible
    d. utility software.   Correct

9. In a word processing program, what menu allows the user to enter a date and time stamp that will automatically update each time the document is opened?

    a. Home   Wrong, but plausible
    b. Insert   Correct
    c. Page Layout   Wrong, but plausible
    d. Review   Wrong, but plausible

10. To undue a deletion in Excel, press:

    a. Esc.   Wrong, but plausible
    b. F5.   Wrong, but plausible
    c. Ctrl + g.   Wrong, but plausible
    d. Ctrl + z.   Correct

Abbreviations, Symbols and Acronyms

When abbreviations, symbols or acronyms are more commonly used in written and verbal communications within fundamentals of technology than the words they represent, they will also be used on the written examination required for competency. The following is a list of abbreviations, symbols and acronyms used on the fundamentals of technology examination.

AI	Artificial Intelligence
CSS	Cascading Style Sheets
csv	comma-separated values
etc.	et cetera
GIS	Geographic Information System
GPS	Global Positioning System
HTML	Hypertext Markup Language
i.e.	that is
iOS	Apple Operating System
IoT	Internet of Things
MMS	Multimedia Messaging Service
PC	personal computer
PDF	Portable Document Format
SMS	Short Message Service
USB	Universal Serial Bus
VPN	Virtual Private Network
VR	Virtual Reality
Wi-Fi	local area wireless technology
xlsx	Microsoft Excel file extension

Test Taking Strategies

This section of the study guide contains valuable information for testing success and provides a common-sense approach for preparing for and performing well on any test.

General Testing Advice

1. Get a good night's rest the night before the test — eight hours of sleep is recommended.
2. Avoid junk food and "eat right" several days before the test.
3. Do not drink a lot or eat a large meal prior to testing.
4. Be confident in your knowledge and skills!
5. Relax and try to ignore distractions during the test.
6. Focus on the task at hand — taking the test and doing your best!
7. Listen carefully to the instructions provided by the exam proctor. If the instructions are not clear, ask for clarification.

Testing Tips

1. Read the entire question before attempting to answer it.
2. Try to answer the question before reading the choices. Then, read the choices to determine if one matches, or is similar, to your answer.
3. Do not change your answer unless you misread the question or are certain that your first answer is incorrect.
4. Answer questions you know first, so you can spend additional time on the more difficult questions.
5. Check to make sure you have answered every question before you submit the assessment for scoring — unanswered questions are marked incorrect.

NOTES

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