Specific Competencies and Skills Tested in this Assessment:

Safety
Identify and implement proper personal and equipment safety procedures (e.g., ESD events)
Identify proper disposal and recycling procedures (e.g., PC components)
Identify industry standards and federal regulations
Recognize proper body mechanics and ergonomic principles

Installing, Configuring, and Upgrading
Identify aspects of power supply and thermal energy
Differentiate characteristics of various processor and memory types
Identify and configure CMOS and BIOS setup
Identify functionality, install, and configure storage device options
Identify and describe characteristics of various peripherals and ports used
Demonstrate knowledge of different operating systems and licensing requirements

Diagnosing and Troubleshooting
Diagnose and identify processor and memory faults
Demonstrate ability to isolate and resolve power supply and battery failures on the system board
Demonstrate ability to identify and resolve storage device issues
Identify and demonstrate the use of hardware and software utilities
Troubleshoot and resolve expansion card issues (e.g., drivers)
Demonstrate ability to set up and troubleshoot external display
Identify tools, diagnostic procedures, and troubleshooting techniques for operating system recovery and upgrade
Demonstrate ability to isolate and resolve peripheral connectivity failures
Utilize command line techniques for diagnosing and troubleshooting
Demonstrate the proper use of multimeters and other test equipment
Identify basic electrical, transmission, and storage units of measurement
**Preventive Maintenance**
Differentiate between an electrical line conditioner, uninterruptible power supply (UPS), and surge protector
Identify the use of system monitoring and various system utilities
Install and maintain current software patches, service packs, and upgrades
Maintain current antivirus, spyware, and/or malware software
Clean and maintain physical computer components according to industry standards

**System Boards, Storage, Processors, and Memory**
Identify processor compatibility, architecture, and upgrade issues
Identify and differentiate memory characteristics and upgrade issues
Identify and differentiate system board characteristics and upgrade issues
Install and troubleshoot common RAID levels
Describe virtualization techniques

**Peripherals**
Identify uses of various input devices (e.g., digital camera, scanner, biometric devices, keyboard, mouse)
Identify and differentiate various printers and printer processes (e.g., inkjet, laser, impact and non-impact, thermal, 3-D)
Identify various I/O and printer connectivity methodologies (e.g., local, network, HDMI, USB, wireless, Bluetooth)
Install and troubleshoot printers

**Basic Networking**
Install, configure, and troubleshoot Network Interface Cards (NICs)
Install, configure, and troubleshoot wired and wireless network connections (including restrictions)
Identify various network topologies (e.g., star, ring, mesh, bus)
Identify various network access methods
Differentiate between a client/server and a peer-to-peer network
Convert units between binary, decimal, and hexadecimal
Describe the seven layers of the OSI model
Explain the properties and characteristics of the TCP/IP model
Install and troubleshoot email
Identify network cabling
Computer Repair Technology – PILOT (continued)

**Security**
Identify and implement physical security (e.g., locked areas, biometric devices, cameras)
Identify and implement digital security (e.g., firewalls, antivirus, spyware, malware, password implementation)
Select and perform proper file backup procedures
Describe social engineering concerns

**Customer Support and Ethics**
Practice professional behavior, including communication and customer service skills
Practice ethical use of software and hardware (e.g., copyright laws, hacking, peer-to-peer, downloading)
Identify social media-related concerns
Practice ethical use of customer privacy information


Written Assessment:

Administration Time: 3 hours
Number of Questions: 200

Areas covered:

7%  Safety
9%  Installing, Configuring, and Upgrading
19%  Diagnosing and Troubleshooting
 8%  Preventive Maintenance
13%  System Boards, Storage, Processors, and Memory
11%  Peripherals
18%  Basic Networking
 8%  Security
 7%  Customer Support and Ethics

Sample Questions:

After unplugging, what is likely to retain a lethal electrical charge?
A. CRT monitor
B. scanner
C. DVD drive
D. processor

What type of RAM is built in or close to the CPU and faster to access than regular RAM?
A. cache
B. BIOS
C. buffer
D. DMA

To make the image on the LCD display that appears stretched appear normal, the technician should
A. change the resolution to its native resolution
B. adjust the brightness and color
C. change the orientation
D. adjust the font size

TRACERT is a system utility that
A. displays the network path from the host to a destination
B. monitors the path of data through the CPU
C. updates the IP address table from the gateway
D. doubles the network connection speed
Brownout and sag are examples of
A. too much voltage on the line
B. a spike lasting milliseconds
C. reduction of voltage on the line
D. a major power failure

When the processor cores can simultaneously do two things at once, it is called
A. hyperthreading
B. multitasking
C. processing
D. virtualizing

An input device that uses a monitor as the interface for input options is a
A. keyboard
B. barcode scanner
C. fingerprint scanner
D. touch screen

The NIC communication method that is bidirectional is
A. half duplex
B. 10 duplex
C. 100 duplex
D. full duplex

Virus files contain bits of code that, when broken down, display certain patterns called
A. autographs
B. images
C. signatures
D. portfolios

Posting personal information on social media might encourage
A. more friend requests
B. pop-ups
C. viruses
D. identity theft
Performance Assessment:

Administration Time: 2 hours and 30 minutes
Number of Jobs: 3

Areas Covered:

16% Device Identification
Participant will be required to identify the components of a computer and record the name next to the correct letter.

31% New Network Hardware Installation and Troubleshooting
Participant will use the correct tools and safety procedures to install provided NIC, install correct driver, connect to internet to verify and record latest version of driver, and document process for repairing problem.

53% Software Installation and Troubleshooting
Participant will use the correct tools and safety procedures to diagnose and repair the fault in computer, create a user with password, ping the loopback address, install a virus protection software package, and create a restore point.

Sample Job: Device Identification

Maximum Job Time: 25 minutes

Participant Activity: The participant will identify each labeled component of the computer and record the name next to the correct letter on the provided answer sheet.