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DAVID L. PROWSE

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Exam Cram

CompTIA® A+ 220-901 and 220-902

Practice Questions

David L. Prowse

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CompTIA® A+ 220-901 and 220-902 Practice Questions Exam Cram

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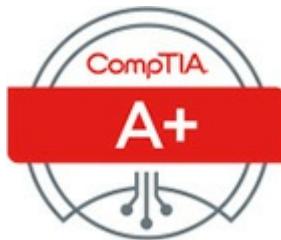
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* Source: CompTIA 9th Annual Information Security Trends study: 500 U.S. IT and Business Executives Responsible for Security

** Source: CompTIA Employer Perceptions of IT Training and Certification

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Introduction

Welcome to *CompTIA A+ 220-901 and 220-902 Practice Questions Exam Cram*. The sole purpose of this book is to provide you with practice questions that are complete with answers and explanations to help you learn, drill, and review for the CompTIA A+ certification exams. The book offers over 600 questions that help you practice each exam domain and help you assess your knowledge before you take the real exams. The detailed answers to every question aid in reinforcing your knowledge about the concepts associated with the 900 series of the CompTIA A+ exams.

Who This Book Is For

The CompTIA A+ exams are designed for individuals with at least 12 months of hands-on experience in the lab or field. If you have that experience, then this book will be an excellent late-stage study tool. However, if you have not acquired that experience, I recommend that you register for a hands-on A+ course or, at the very least, purchase an authorized A+ study guide such as the *CompTIA A+ Exam Cram 220-901 & 220-902* textbook, or consider my A+ video courses. After you take the course and/or read the study guide, return to this book as your late-stage test preparation to be used just before taking the real exams.

What You Will Find in This Book

In every chapter devoted to practice exams, you will find the following three elements:

- ▶ **Practice Questions:** There are over 600 questions that help you learn, drill, and review for the exams. All of the questions in this section are multiple-choice.
- ▶ **Quick-Check Answer Key:** After you have finished answering the questions, you can quickly grade your exam from this section. Only correct answers are given in this section. No explanations are offered yet. Even if you have answered a question incorrectly, do not be discouraged. Keep in mind that this is not the real exam. You can always review the topic and revisit the questions again.
- ▶ **Answers and Explanations:** This section provides you with correct answers as well as further explanations about the content posed in

that question. Use this information to learn why an answer is correct and to reinforce the content in your mind for exam day.

The book also comes with a companion website. It contains a simulated testing environment where you can take all the exams on a computer in study mode or in full practice test mode. It also includes a “Real-World Scenarios” document and supporting performance-based exercises and videos.

Hints for Using This Book

Complete your exams on a separate piece of paper so that you can reuse the practice questions again if necessary. Also, plan to score 90 percent or higher on each exam before moving on to the next one. The higher you score on these practice questions, the better your chances for passing the real exams.

I am available for questions at my web site:

www.davidlprowse.com

I answer questions Monday through Friday, usually in the mornings.

Companion Website

Register this book to get access to the Pearson IT Certification test engine and other study materials plus additional bonus content. Check this site regularly for new and updated postings written by the author that provide further insight into the more troublesome topics on the exam. Be sure to check the box that you would like to hear from us to receive updates and exclusive discounts on future editions of this product or related products.

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Note

The cardboard case in the back of this book includes the paper that lists the activation code for the practice exam associated with this book. Do not lose the activation code.

Accessing the Pearson Test Prep Software Online

The online version of this software can be used on any device with a browser and connectivity to the Internet including desktop machines, tablets, and smartphones. To start using your practice exams online, simply follow these steps:

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4. In the **My Products** tab, click the **Activate New Product** button.
5. Enter the access code printed on the insert card in the back of your book to activate your product.
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Browsers:

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- ▶ Firefox (Windows and Mac), version 35 and above
- ▶ Safari (Mac), version 7
- ▶ Internet Explorer 10, 11
- ▶ Microsoft Edge
- ▶ Opera

Devices:

- ▶ Desktop and laptop computers
- ▶ Tablets running on Android and iOS
- ▶ Smartphones with a minimum screen size of 4.7”

Accessing the Pearson Test Prep Software Offline

If you wish to study offline, you can download and install the Windows version of the Pearson Test Prep software. There is a download link for this software on the book’s companion website.

Previous Users: If you have already installed the Pearson Test Prep software from another purchase, you do not need to install it again. Launch the Pearson Test Prep software from your Start menu. Click Activate Exam in the My Products or Tools tab, and enter the activation key found in the sleeve in the back of your book to activate and download the free practice questions for this book.

New Users: You will need to install the Pearson Test Prep software on your Windows desktop. Follow the steps below to download, install, and activate your exams.

1. Click the **Windows** Version link under the Install Pearson Test Prep section of the page to download the software.
2. Once the software finishes downloading, unzip all the files on your computer.
3. Double click the application file to start the installation, and follow the on-screen instructions to complete the registration.
4. Once the installation is complete, launch the application and select **Activate Exam** button on the My Products tab.
5. Click the **Activate a Product** button in the Activate Product Wizard.
6. Enter the unique access code found on the card in the sleeve in the back of your book and click the **Activate** button.

7. Click **Next** and then the Finish button to download the exam data to your application.
8. You can now start using the practice exams by selecting the product and clicking the **Open Exam** button to open the exam settings screen.

Desktop Version System Requirements

- ▶ Windows 10, Windows 8.1, or Windows 7
- ▶ Microsoft .NET Framework 4.5 Client
- ▶ Pentium class 1 GHz processor (or equivalent)
- ▶ 512MB RAM
- ▶ 650MB hard disk space plus 50MB for each downloaded practice exam
- ▶ Access to the Internet to register and download exam databases.

Need Further Study?

Consider a hands-on A+ course, and be sure to see the following sister products to this book:

- ▶ *CompTIA A+ Exam Cram*, 220-901/220-902 by David L. Prowse
(ISBN: 978-0789756312)
- ▶ *CompTIA A+ 220-901 Complete Video Course* by David L. Prowse
(ISBN: 9780134499307)
- ▶ *CompTIA A+ 220-902 Complete Video Course* by David L. Prowse
(ISBN: 9780134494128)

Chapter One. Introduction to the 220-901 Exam

The CompTIA A+ 220-901 exam is all about PC hardware, computer networking, mobile devices, and troubleshooting of those technologies.

In this chapter, we briefly discuss how the exam is categorized, give you some test-taking tips, and then prepare you to take the four 220-901 practice exams that follow this chapter.

Exam Breakdown

The CompTIA A+ 220-901 exam objectives are divided up by domain. Each domain makes up a certain percentage of the test. The four domains of the A+ 220-901 exam and their respective percentages are listed in [Table 1.1](#).

Domain	Percentage of Exam
1.0 Hardware	34
2.0 Networking	21
3.0 Mobile Devices	17
4.0 Hardware & Network Troubleshooting	28
Total	100

TABLE 1.1 220-901 Domains

Chances are that when you take the real CompTIA exam, the questions will be based on these percentages, but you never know. The questions are chosen at random, so you have to be prepared for anything, and study all of the objectives.

Each domain has several objectives. There are far too many to list in this book, but I do recommend you download a copy of the objectives for yourself. You can get them from CompTIA's A+ webpage or from my website: www.davidlprowse.com.

Let's talk about each domain briefly.

Domain 1.0: Hardware (34%)

This domain concerns building a computer and upgrading it. The core of a PC includes the motherboard, CPU, and RAM. Those are the guts of the

computer, so to speak. They are installed inside a computer case. You are required to understand motherboard form factors and compatibility concerns as well as the ports, connectors, buses, and expansion slots of a motherboard. You should also know how to access, configure, and update the BIOS and understand the relationship between the BIOS, CMOS, and lithium battery.

Note

I might refer to the BIOS as UEFI or as BIOS/UEFI or UEFI/BIOS. Any of these terms might be seen on the exams or in the IT field.

Then there's everything that connects to the motherboard: CPU and fan, RAM, expansion cards, hard drives, and optical drives. Plus, there are all of the ports on a computer, such as USB, FireWire, video, and audio ports. Next are the peripherals such as monitors, printers, USB flash drives, and other devices that interact with the computer.

And finally, you should know some custom PC configurations, such as gaming PCs, CAD/CAM workstations, and HTPCs, and the hardware that those different types of systems require.

Domain 2.0: Networking (21%)

The Networking domain covers network standards, cabling, connectors, and tools. TCP/IP is also a big portion of this domain; you will undoubtedly see questions on IP addresses, ports, and protocols. You should be able to compare wired and wireless technologies and describe the various types of networking hardware available.

Domain 3.0: Mobile Devices (17%)

CompTIA refers to any portable computers as mobile devices, including laptops, tablets, smartphones, and hybrid versions of those devices. This domain comprises a smaller percentage of the exam than the Hardware domain, but remember that every domain is important. You should be able to demonstrate the ability to install and configure laptop hardware and software. You also should know how to operate laptops' special functions, such as dual displays, wireless, and Bluetooth. Finally, because of the explosion of mobile devices in the tech world and the increased adoption of bring your own device (BYOD) policies by companies, you need to

understand the hardware side of smartphones and tablets for the 220-901 exam.

Domain 4.0: Hardware & Network Troubleshooting (28%)

Troubleshooting is key; it is the most vital ability a technician should possess. You need to understand how to troubleshoot hardware failures, bootup issues, no-display obstacles, network connectivity difficulties, and, of course, printing problems. This is the crux of the exam (both exams, to be accurate), and you need to study and practice accordingly.

Previous versions of this exam (such as, for example, exams 220-801 and 220-701) had little or no troubleshooting. No longer. Now, expect one question out of four (or more) to be based on a troubleshooting scenario. Practice the questions in this book, understand the concepts, and more importantly, practice the topics on real computers in a hands-on way whenever possible. This is where hands-on experience plays a big role, and is one of the reasons that CompTIA recommends that a test-taker have 12 months of hands-on experience in the lab or field.

Test-Taking Tips

My first recommendation is to take the exams slowly. Don't rush it, especially on the first exam. Carefully read through each question. Some questions are tricky by design. Others may seem tricky if you lack knowledge in certain areas. Still other questions are somewhat vague, and that is intentional as well. You need to place yourself in the scenario of the question. Think of yourself actually installing a CPU and heat sink, or imagine that you are upgrading a video card. Picture in your head the steps you must take to accomplish what the question is asking of you. Envision what you do with computers step-by-step, and the answers will come more easily to you.

Next, read through *all* of the answers. Don't just jump on the first one that seems correct to you. Look at each answer and ask yourself whether it is right or wrong. And if it is wrong, define why it is wrong. This helps you to eliminate wrong answers in the search for the correct answer. When you have selected an answer, be confident in your decision.

Finally, don't get stuck on any one question. You can always mark it and return to it later. I'll have more tips as we progress through the book, and I summarize all test-taking tips at the end of this book.

Getting Ready for the Practice Exams

The next four chapters feature practice exams based on the 220-901 exam. Every exam is followed by in-depth explanations. Be sure to read them carefully. Don't move on to another exam until you have mastered the first one. And by mastered I mean you should be scoring 90 percent or higher on the exam (without memorizing the answers). Really understand the concepts before moving on to another exam. This makes you an efficient test-taker and allows you to benefit the most from this book.

Consider timing yourself. Give yourself 90 minutes to complete each exam. Write down your answers on a piece of paper. When you are finished, if there is still time left, review your answers for accuracy.

Each exam gets progressively more difficult. Don't get overconfident if you do well on the first exam; your skills will be tested more thoroughly as you progress. And don't get too concerned if you don't score 90 percent on the first try. This just means you need to study more and try the test again later. Keep studying and practicing!

After each exam is an answer key, followed by the in-depth answers/explanations. Don't skip the explanations, even if you think you know the concept. I often insert little tidbits of knowledge that are on the periphery of the concept; these serve to build you a stronger foundation of knowledge in general. In other words, I might branch off the main topic, but this is done so you can get a clearer, bigger picture of the 220-901 exam and of the tech world in general.

So take a deep breath, and let's go!

Chapter Two. 220-901 Practice Exam A

Welcome to the first 220-901 practice exam. This is the easiest of the 220-901 exams. The subsequent exams will get more difficult and include more troubleshooting scenarios as you progress.

Take this first exam slowly. The goal is to make sure you understand all of the concepts before moving on to the next test.

Write down your answers and check them against the Quick-Check Answer Key that immediately follows the exam. After the answer key you will find the explanations for all of the answers. Good luck!

Practice Questions

1. Which of the following are components you might find inside a PC?
(Select the three best answers.)

- A. CPU
- B. Motherboard
- C. Keyboard
- D. Printer
- E. RAM
- F. Cable modem

Quick Answer: [28](#)

Detailed Answer: [29](#)

2. Which device stores data over the long term?

- A. CPU
- B. RAM
- C. Hard drive
- D. Video card

Quick Answer: [28](#)

Detailed Answer: [29](#)

3. You would normally plug speakers into which type of port?

- A. FireWire
- B. DVI
- C. 1/8-inch TRS

D. 1/4-inch TRS

Quick Answer: [28](#)

Detailed Answer: [29](#)

4. To which type of expansion slot would you install an x16 card?

- A. PCI
- B. PCIe
- C. USB
- D. PCI-X

Quick Answer: [28](#)

Detailed Answer: [29](#)

5. Which process of the computer checks all your components during boot?

- A. CMOS
- B. POST
- C. BIOS
- D. EEPROM

Quick Answer: [28](#)

Detailed Answer: [29](#)

6. Tim installs a new CPU in a computer. After a few hours, the processor starts to overheat. Which of the following might be the cause?

- A. The CPU is not locked down.
- B. The CPU is not properly seated.
- C. Thermal compound was not applied.
- D. The CPU is not compatible with the motherboard.

Quick Answer: [28](#)

Detailed Answer: [29](#)

7. Which of the following could cause the POST to fail? (Select the two best answers.)

- A. CPU
- B. Power supply
- C. Optical drive
- D. Memory

E. Hard drive

Quick Answer: [28](#)

Detailed Answer: [29](#)

[8.](#) Which expansion bus uses lanes to transfer data?

- A. PCI
- B. DMI
- C. PCIe
- D. SATA

Quick Answer: [28](#)

Detailed Answer: [29](#)

[9.](#) Which of the following might you find as part of a tablet computer?
(Select the two best answers.)

- A. Flash memory
- B. SATA hard drive
- C. Multi-touch touchscreen
- D. 24-inch display

Quick Answer: [28](#)

Detailed Answer: [30](#)

[10.](#) Which kind of socket incorporates “lands” to ensure connectivity to a CPU?

- A. PGA
- B. Chipset
- C. LGA
- D. Copper

Quick Answer: [28](#)

Detailed Answer: [30](#)

[11.](#) How should you hold RAM when installing it?

- A. By the edges
- B. By the front and back
- C. With tweezers
- D. With a punchdown tool

Quick Answer: [28](#)

Detailed Answer: [30](#)

12. Which device should you use to protect against power outages?

- A.** Multimeter
- B.** UPS
- C.** FedEx
- D.** Surge protector

Quick Answer: [28](#)

Detailed Answer: [30](#)

13. Which of the following uses a single 24-pin main motherboard power connector?

- A.** ATX
- B.** ATX 12V 1.3
- C.** ATX 12V 2.0
- D.** ATX 5V 2.0

Quick Answer: [28](#)

Detailed Answer: [30](#)

14. What is the maximum data transfer rate of SATA revision 3.0?

- A.** 1.5 Gb/s
- B.** 150 MB/s
- C.** 3.0 Gb/s
- D.** 6.0 Gb/s

Quick Answer: [28](#)

Detailed Answer: [30](#)

15. Which type of adapter card accepts broadcast programming?

- A.** FireWire card
- B.** Video capture card
- C.** Network interface card
- D.** TV tuner

Quick Answer: [28](#)

Detailed Answer: [30](#)

16. Which of the following types of custom PCs requires an HDMI output?

- A. HTPC
- B. Gaming PC
- C. Virtualization workstation
- D. CAD/CAM workstation

Quick Answer: [28](#)

Detailed Answer: [30](#)

17. How many pins are inside a SATA data connector?

- A. 15
- B. 7
- C. 24
- D. 127

Quick Answer: [28](#)

Detailed Answer: [31](#)

18. What is the delay in the RAM's response to a request from the memory controller called?

- A. Latency
- B. Standard deviation
- C. Fetch interval
- D. Lag

Quick Answer: [28](#)

Detailed Answer: [31](#)

19. What is the minimum number of hard drives necessary to implement RAID 5?

- A. Two
- B. Five
- C. Three
- D. Four

Quick Answer: [28](#)

Detailed Answer: [31](#)

20. A user's time and date keeps resetting to January 1, 2000. Which of the following is the most likely cause?

- A. The BIOS needs to be updated.

- B.** Windows needs to be updated.
- C.** The Windows Date and Time Properties window needs to be modified.
- D.** The lithium battery needs to be replaced.

Quick Answer: [28](#)

Detailed Answer: [31](#)

21. Which type of adapter card is normally plugged into a PCIe x16 adapter card slot?

- A.** Modem
- B.** Video
- C.** NIC
- D.** Sound

Quick Answer: [28](#)

Detailed Answer: [31](#)

22. To prevent damage to a computer, the computer should be connected to which of the following?

- A.** A power strip
- B.** A power inverter
- C.** An AC to DC converter
- D.** A UPS

Quick Answer: [28](#)

Detailed Answer: [31](#)

23. Which of the following is a common type of CPU for a smartphone?

- A.** LGA 2011
- B.** SoC
- C.** Core i7
- D.** LPDDR

Quick Answer: [28](#)

Detailed Answer: [31](#)

24. Which of the following components could cause the POST to beep several times and fail during boot?

- A.** Sound card
- B.** Power supply

C. Hard drive

D. RAM

Quick Answer: [28](#)

Detailed Answer: [31](#)

25. Which of the following is the proper boot sequence of a PC?

A. CPU, POST, boot loader, operating system

B. Boot loader, operating system, CPU, RAM

C. POST, CPU, boot loader, operating system

D. CPU, RAM, boot loader, operating system

Quick Answer: [28](#)

Detailed Answer: [31](#)

26. Which of the following are ports you might find on smartphones and tablets? (Select the two best answers.)

A. eSATA

B. Micro USB

C. Lightning

D. DVI

Quick Answer: [28](#)

Detailed Answer: [32](#)

27. Which of the following has the fastest data throughput?

A. CD-ROM

B. Hard drive

C. RAM

D. USB

Quick Answer: [28](#)

Detailed Answer: [32](#)

28. Which kind of form factor is commonly found in HTPCs?

A. ATX

B. Pico-ITX

C. MicroATX

D. Nano-ITX

Quick Answer: [28](#)

Detailed Answer: [32](#)

29. Which of the following CPU cooling methods is the most common?

- A. Heat sink
- B. Heat sink and fan
- C. Liquid cooling
- D. Liquid nitrogen

Quick Answer: [28](#)

Detailed Answer: [32](#)

30. Which of the following is not a video port?

- A. DVI
- B. HDMI
- C. DisplayPort
- D. S/PDIF

Quick Answer: [28](#)

Detailed Answer: [32](#)

31. Which of the following is necessary for a CAD/CAM workstation?

(Select the two best answers.)

- A. Powerful CPU
- B. HDMI output
- C. Surround sound
- D. High-end video

Quick Answer: [28](#)

Detailed Answer: [32](#)

32. Which of the following technologies allows two mobile devices to transfer data simply by touching them together?

- A. USB
- B. NFC
- C. Bluetooth
- D. Wi-Fi

Quick Answer: [28](#)

Detailed Answer: [32](#)

33. What type of power connector is used for an x16 video card?

- A. Molex 4-pin
- B. SATA 15-pin
- C. PCIe 6-pin
- D. P1 24-pin

Quick Answer: [28](#)

Detailed Answer: [32](#)

34. Which kind of current does a typical desktop PC draw from a wall outlet?

- A. Direct current
- B. Neutral current
- C. Alternating current
- D. Draw current

Quick Answer: [28](#)

Detailed Answer: [33](#)

35. Which of the following are output devices? (Select the three best answers.)

- A. Speakers
- B. Keyboard
- C. Mouse
- D. Printer
- E. Display
- F. Touchpad

Quick Answer: [28](#)

Detailed Answer: [33](#)

36. A customer complains that he gets a headache when he views his display for more than an hour. What should you do?

- A. Raise the resolution to a higher setting.
- B. Install an antiglare filter.
- C. Dim the lights near the customer's desk.
- D. Upgrade the video connector from DVI to VGA.

Quick Answer: [28](#)

Detailed Answer: [33](#)

37. What does the *b* in 1000 Mbps stand for?

- A. Megabytes
- B. Bits
- C. Bytes
- D. Bandwidth

Quick Answer: [28](#)

Detailed Answer: [33](#)

38. When running cable through drop ceilings, which type of cable do you need?

- A. PVC
- B. Category 5
- C. Strong cable
- D. Plenum

Quick Answer: [28](#)

Detailed Answer: [33](#)

39. Which of the following is the maximum data transfer rate for wireless protocol 802.11n?

- A. 11 Mbps
- B. 600 Mbps
- C. 480 Mbps
- D. 54 Mbps
- E. 1.7 Gbps

Quick Answer: [28](#)

Detailed Answer: [33](#)

40. Which device connects multiple computers together in a LAN?

- A. Modem
- B. Router
- C. Switch
- D. Firewall

Quick Answer: [28](#)

Detailed Answer: [33](#)

41. Which of the following is the default subnet mask for IP address

192.168.1.1?

- A. 255.255.0.0
- B. 255.255.255.0
- C. 255.0.0.0
- D. 255.255.255.255

Quick Answer: [28](#)

Detailed Answer: [34](#)

42. Which of the following is the minimum category cable needed for a 1000BASE-T network?

- A. Category 3
- B. Category 5
- C. Category 5e
- D. Category 6

Quick Answer: [28](#)

Detailed Answer: [34](#)

43. Which of the following IP addresses can be routed across the Internet?

- A. 127.0.0.1
- B. 192.168.1.1
- C. 129.52.50.13
- D. 10.52.50.13

Quick Answer: [28](#)

Detailed Answer: [34](#)

44. Which port number is used by HTTP?

- A. 21
- B. 25
- C. 80
- D. 110

Quick Answer: [28](#)

Detailed Answer: [34](#)

45. Which of the following best describes *full duplex*?

- A. Transmitting and receiving data

- B.** Transmitting and receiving data simultaneously
- C.** Transmitting data only
- D.** Receiving data only

Quick Answer: [28](#)

Detailed Answer: [34](#)

46. Which of the following cable types have a copper medium? (Select the three best answers.)

- A.** Twisted pair
- B.** Coaxial
- C.** Fiber optic
- D.** Cat 7
- E.** Multimode

Quick Answer: [28](#)

Detailed Answer: [34](#)

47. Which of the following cable types can protect from electromagnetic interference (EMI)? (Select the two best answers.)

- A.** UTP
- B.** STP
- C.** Fiber optic
- D.** Cat 6

Quick Answer: [28](#)

Detailed Answer: [34](#)

48. You are configuring Bob's computer to access the Internet. Which of the following are required? (Select all that apply.)

- A.** DNS server address
- B.** Gateway address
- C.** Email server name
- D.** DHCP server address
- E.** Domain name

Quick Answer: [28](#)

Detailed Answer: [34](#)

49. Which of the following translates a computer name into an IP address?

- A. TCP
- B. UDP
- C. DNS
- D. FTP

Quick Answer: [28](#)

Detailed Answer: [34](#)

50. A customer wants to access the Internet from many different locations in the United States. Which of the following is the best technology to enable her to do so?

- A. Infrared
- B. Cellular WAN
- C. Bluetooth
- D. 802.11n

Quick Answer: [28](#)

Detailed Answer: [35](#)

51. You just configured the IP address 192.168.0.105 in Windows. When you press the Tab key, Windows automatically configures the default subnet mask of 255.255.255.0. Which of the following IP addresses is a suitable gateway address?

- A. 192.168.1.100
- B. 192.168.1.1
- C. 192.168.10.1
- D. 192.168.0.1

Quick Answer: [28](#)

Detailed Answer: [35](#)

52. A wireless network is referred to as which of the following?

- A. SSID
- B. WPA
- C. DMZ
- D. DHCP

Quick Answer: [28](#)

Detailed Answer: [35](#)

53. Which of the following connector types is used by fiber optic

cabling?

- A. LC
- B. RJ45
- C. RG-6
- D. RJ11

Quick Answer: [28](#)

Detailed Answer: [35](#)

[54.](#) Which protocol uses port 53?

- A. FTP
- B. SMTP
- C. DNS
- D. HTTP

Quick Answer: [28](#)

Detailed Answer: [35](#)

[55.](#) Which of the following Internet services are wireless? (Select the three best answers.)

- A. Cable Internet
- B. WiMAX
- C. Satellite
- D. DSL
- E. Cellular
- F. Fiber optic

Quick Answer: [28](#)

Detailed Answer: [35](#)

[56.](#) Which of the following terms best describes two or more LANs connected together over a large geographic distance?

- A. PAN
- B. WAN
- C. WLAN
- D. MAN

Quick Answer: [28](#)

Detailed Answer: [35](#)

57. Which device connects to the network and has the sole purpose of providing data to clients?

- A. NAS
- B. NAT
- C. NAC
- D. IaaS

Quick Answer: [28](#)

Detailed Answer: [35](#)

58. You are making your own networking patch cable. You need to attach an RJ45 plug to the end of a twisted-pair cable. Which tool should you use?

- A. Tone and probe kit
- B. Cable tester
- C. Crimper
- D. Multimeter

Quick Answer: [28](#)

Detailed Answer: [36](#)

59. Which port is used by RDP?

- A. 80
- B. 110
- C. 443
- D. 3389

Quick Answer: [28](#)

Detailed Answer: [36](#)

60. Which key on a laptop aids in switching to an external monitor?

- A. Fn
- B. Ctrl
- C. Alt
- D. Shift

Quick Answer: [28](#)

Detailed Answer: [36](#)

61. Which of the following display types is most likely to be found on a laptop?

- A. CRT
- B. LCD
- C. OLED
- D. VGA

Quick Answer: [28](#)

Detailed Answer: [36](#)

62. Which of the following printer failures can be described as a condition in which the internal feed mechanism stopped working temporarily?

- A. No connectivity
- B. Corrupt driver
- C. Paper jam
- D. Power cycle

Quick Answer: [28](#)

Detailed Answer: [36](#)

63. Which of the following is the most commonly used battery type in laptops?

- A. Lithium-ion (Li-ion)
- B. Nickel-cadmium (Ni-Cd)
- C. Nickel-metal hydride (NiMH)
- D. Fuel cell

Quick Answer: [28](#)

Detailed Answer: [36](#)

64. A customer can barely hear sound from the speakers on her laptop. What should you do first?

- A. Install a new sound driver
- B. Tap the speakers
- C. Search for a volume wheel/key
- D. Reinstall Windows

Quick Answer: [28](#)

Detailed Answer: [36](#)

65. After you replace a motherboard in a PC, the system overheats and fails to boot. Which of the following is the most likely cause?

- A. The GPU is not compatible with the CPU.
- B. The new motherboard's firmware is out of date.
- C. Thermal paste was not applied between the heat sink and the CPU.
- D. The case fan failed.

Quick Answer: [28](#)

Detailed Answer: [37](#)

66. You use your laptop often. Which of the following is a simple, free way to keep your laptop running cool?

- A. Keep the laptop on a flat surface.
- B. Put the laptop in the freezer when not in use.
- C. Direct a fan at the laptop.
- D. Keep the laptop turned off whenever possible.

Quick Answer: [28](#)

Detailed Answer: [37](#)

67. Which of the following are important factors when purchasing a replacement laptop AC adapter? (Select the two best answers.)

- A. Current and voltage
- B. Connector size and shape
- C. Battery type
- D. Inverter type

Quick Answer: [28](#)

Detailed Answer: [37](#)

68. Eric uses an external monitor with his laptop. He tells you that his laptop will boot but the system won't display anything on the external screen. Which of the following solutions enables the display?

- A. Connect the laptop to another external monitor.
- B. Press the Fn and Screen keys one or more times until an image appears on the screen.
- C. Press the Enter and Esc keys while the laptop is booting.
- D. Press the Fn key while the laptop is booting.

Quick Answer: [28](#)

Detailed Answer: [37](#)

[69.](#) Which type of printer uses a toner cartridge?

- A. Inkjet
- B. Laser
- C. Dot matrix
- D. Thermal

Quick Answer: [28](#)

Detailed Answer: [37](#)

[70.](#) Which of the following should *not* be connected to a UPS?

- A. PCs
- B. Monitors
- C. Laser printers
- D. Speakers

Quick Answer: [28](#)

Detailed Answer: [37](#)

[71.](#) Terri finishes installing a printer for a customer. What should she do next?

- A. Verify that the printer prints by using Microsoft Word.
- B. Print a test page.
- C. Restart the spooler.
- D. Set up a separator page.

Quick Answer: [28](#)

Detailed Answer: [37](#)

[72.](#) Which of the following best describes printing in duplex?

- A. Printing on both sides of the paper
- B. Printer collation
- C. Full-duplex printer communication
- D. Printing to file

Quick Answer: [28](#)

Detailed Answer: [38](#)

[73.](#) Special paper is needed to print on which type of printer?

- A. Dot matrix

- B.** Thermal
- C.** Laser
- D.** Inkjet

Quick Answer: [28](#)

Detailed Answer: [38](#)

74. Which environmental issue affects a thermal printer the most?

- A.** Moisture
- B.** ESD
- C.** Dirt
- D.** Heat

Quick Answer: [28](#)

Detailed Answer: [38](#)

75. Which of the following occurs last in the laser printing process?

- A.** Charging
- B.** Exposing
- C.** Developing
- D.** Fusing
- E.** Cleaning

Quick Answer: [28](#)

Detailed Answer: [38](#)

76. Which type of printer uses impact to transfer ink from a ribbon to the paper?

- A.** Laser
- B.** Inkjet
- C.** Dot matrix
- D.** Thermal

Quick Answer: [28](#)

Detailed Answer: [38](#)

77. Which of the following steps enables you to take control of a network printer from a remote computer?

- A.** Installing the printer locally and accessing the Sharing tab
- B.** Installing the printer locally and accessing the spool settings

- C. Installing the printer locally and accessing the Ports tab
- D. Connecting to the printer via FTP

Quick Answer: [28](#)

Detailed Answer: [38](#)

78. A color laser printer produces images that are tinted blue. Which of the following steps should be performed to address this problem?

- A. Clean the toner cartridge
- B. Calibrate the printer
- C. Change the fusing assembly
- D. Clean the primary corona

Quick Answer: [28](#)

Detailed Answer: [38](#)

79. A laptop cannot access the wireless network. Which of the following statements best describes the most likely causes for this? (Select the two best answers.)

- A. The function key for wireless was pressed by accident.
- B. The user installed a new web browser.
- C. The wireless network was forgotten in Windows.
- D. The computer is obtaining an IP address automatically.

Quick Answer: [28](#)

Detailed Answer: [39](#)

80. A desktop computer does not have a lit link light on the back of the computer. Which of the following is the most likely reason for this?

- A. Wi-Fi was disabled.
- B. USB is malfunctioning.
- C. The system did not POST correctly.
- D. The network cable is disconnected.

Quick Answer: [28](#)

Detailed Answer: [39](#)

Quick-Check Answer Key

1. A, B, E

2. C

- 3. C
- 4. B
- 5. B
- 6. C
- 7. A, D
- 8. C
- 9. A, C
- 10. C
- 11. A
- 12. B
- 13. C
- 14. D
- 15. D
- 16. A
- 17. B
- 18. A
- 19. C
- 20. D
- 21. B
- 22. D
- 23. B
- 24. D
- 25. A
- 26. B, C
- 27. C
- 28. C
- 29. B
- 30. D
- 31. A, D
- 32. B
- 33. C
- 34. C
- 35. A, D, E

- 36. B
- 37. B
- 38. D
- 39. B
- 40. C
- 41. B
- 42. C
- 43. C
- 44. C
- 45. B
- 46. A, B, D
- 47. B, C
- 48. A, B
- 49. C
- 50. B
- 51. D
- 52. A
- 53. A
- 54. C
- 55. B, C, E
- 56. B
- 57. A
- 58. C
- 59. D
- 60. A
- 61. B
- 62. C
- 63. A
- 64. C
- 65. C
- 66. A
- 67. A, B
- 68. B

- [69. B](#)
- [70. C](#)
- [71. B](#)
- [72. A](#)
- [73. B](#)
- [74. D](#)
- [75. E](#)
- [76. C](#)
- [77. C](#)
- [78. B](#)
- [79. A, C](#)
- [80. D](#)

Answers and Explanations

- 1. Answers: A, B, and E.** Common components inside a PC include the CPU, motherboard, and RAM, along with the power supply, adapter cards, and hard drives. Keyboards (and mice) are input devices that are located outside the PC. Printers (and displays) are output devices that are located outside the PC. A cable modem is an Internet communication device that is outside of the PC. *Know the internal components of a PC!*
- 2. Answer: C.** The hard drive stores data over the long term. The hard drive stores the OS and data in a nonvolatile fashion, meaning the data won't be erased when the computer is turned off. The CPU calculates data and sends it to RAM for temporary storage; the RAM (which is volatile) is cleared when the computer is turned off. The video card stores temporary video data within its onboard memory, but this, like RAM, is volatile and is cleared when the computer is turned off.
- 3. Answer: C.** 1/8" TRS jacks (also known as mini-jacks) are the most common for speaker connections. Speakers normally plug into a sound card or motherboard that have these ports; they are also sometimes referred to as 3.5 mm jacks. FireWire (IEEE 1394) ports are often used by audio equipment, but not for connecting speakers directly. DVI (Digital Visual Interface) is a type of video port. The larger 1/4" TRS connections are for instrument cables or full-size stereo connections.

- 4. Answer: B.** PCI Express (PCIe) slots accept x1, x4, and x16 (pronounced “by sixteen”) cards. PCIe is by far the most common expansion slot for video cards (which are usually x16). PCI is an older expansion bus that can accept video cards but, unlike PCIe, they have no particular designation. USB stands for universal serial bus; it is a standard for connecting external equipment to a computer, not an expansion bus. PCI-X is a derivative of PCI, used mostly in servers, for example, with network adapters.
- 5. Answer: B.** The POST (power-on self-test) is part of the Basic Input-Output System (BIOS) or Unified Extensible Firmware Interface (UEFI). It runs a self-check of the computer system during boot and stores many of the parameters of the components within the CMOS. EEPROM is a type of ROM chip on which the BIOS might reside. BIOS is known as firmware.
- 6. Answer: C.** Without the thermal compound applied, the processor might overheat after a few hours. If the CPU is not locked down, or is not properly seated, the PC will simply fail to boot. If the CPU is not compatible with the motherboard, either it will not fit the socket or the PC will not boot.
- 7. Answers: A and D.** The CPU and memory need to be installed properly for the POST to run (and to pass). The hard drive and optical drive may or may not be installed properly, but they are not necessary for the POST to complete. If the power supply is defective, the system simply will not boot and will not even get to the POST stage.
- 8. Answer: C.** PCIe (PCI Express) uses serial lanes to send and receive data. That means one bit at a time per lane. PCI is a parallel technology; parallel means eight bits at a time or multiples of eight. DMI (Direct Media Interface) is a serial technology that does use lanes, but it is not an expansion bus; rather, it connects the chipset to the CPU. SATA is the standard for connecting hard drives and optical drives and transmitting data to and from those devices.
- 9. Answers: A and C.** A tablet computer will almost always contain flash memory (16 GB, 32 GB, or similar), and a multi-touch touchscreen. However, SATA hard drives and 24-inch displays are more likely to be found on PCs, not tablet computers.
- 10. Answer: C.** LGA (land grid array) is the type of socket that uses “lands” to connect the socket to the CPU. PGA (pin grid array) sockets have pinholes that make for connectivity to the CPU’s

copper pins. The chipset is either a single chip, or the combination of the northbridge and southbridge on the motherboard. LGA sockets are often a brass alloy or have gold contacts; although copper might be a possibility for some sockets, such sockets don't fit the description of "lands" in the question. LGA is the best answer.

- 11. Answer: A.** Hold RAM by the edges to avoid contact with the pins, chips, and circuitry. Touching the front and back is not advised because it will require touching the chips on the RAM module. Tools are not needed, and if they are used, metallic ones could be damaging to the module. Plastic tweezers are used to remove screws that fall into tough-to-reach places in the case. A punchdown tool is used to terminate networking cables to patch panels or to punch blocks.
- 12. Answer: B.** The UPS (uninterruptible power supply) is the only item listed that protects the computer from power outages like blackouts and brownouts. A multimeter is used to test AC outlets and individual wires inside the computer. FedEx is a shipping company, not a computer acronym. A surge protector (or surge suppressor) is used to protect computer equipment from surges and spikes in power, but cannot protect against power outages.
- 13. Answer: C.** ATX 12V 2.0 (and higher) combined the 20-pin and 4-pin connectors used in ATX 12V 1.3 into one 24-pin connector. ATX is simply the name of the form factor; there are many types of ATX. There is no ATX 5V. Although ATX sends 12-volt and 5-volt signals, it is known as ATX 12v.
- 14. Answer: D.** SATA revision 3.0 can transfer a maximum of 6.0 Gb/s (6 gigabits per second, note the lowercase *b*). This allows a peak throughput of 600 MB/s (600 megabytes per second, note the uppercase *B*). 1.5 Gb/s is the data transfer rate of SATA revision 1.0. Its maximum throughput is 150 MB/s. 3.0 Gb/s is the data transfer rate of SATA revision 2.0. It has a peak throughput of 300 MB/s.
- 15. Answer: D.** The TV tuner card accepts television broadcast programming. It will usually have cable-in and antenna-in F-connector ports. FireWire cards allow a computer to connect to FireWire devices such as hard drives and audio devices. Video capture cards are used to record video from a camera, VCR, or close-circuit television system. A network interface card is also known as a NIC or network adapter; it makes the connection to the Ethernet network for a PC.

- 16. Answer: A.** A home theater PC (HTPC) requires a High-Definition Multimedia Interface (HDMI) output on the video card so that it can connect properly to the HDMI port on a television. Sure, it is possible to connect via DVI with an adapter, or even by way of VGA, but the whole point of a true HTPC is that it has the best to offer when it comes to connections. Because most theater system TVs have one or more HDMI inputs, the HTPC should have at least one HDMI output. Gaming PCs usually have DVI or DisplayPort connections to connect to desktop monitors, though they might have HDMI as well. Virtualization workstations don't rely on video cards as much as the other systems listed in the answers, so HDMI is not necessary. CAD/CAM workstations require a high-end video card, with DisplayPort or DVI being the most common.
- 17. Answer: B.** The SATA data connector has seven pins. The SATA power connector has 15 pins. ATX 12V 2.0 and higher power connections have 24 pins. Among other things, 127 is the maximum amount of USB devices you can connect to the computer.
- 18. Answer: A.** Memory latency or CAS (column address strobe) latency happens when a memory controller tries to access data from a memory module. It is a slight delay (usually measured in nanoseconds) while the memory module responds to the memory controller. The memory controller (also known as the northbridge) has a specific speed at which it operates. If the CPU asks the chip for too much information at once, this might increase latency time while the memory controller works.
- 19. Answer: C.** Because RAID 5 uses striping with parity, a third disk is needed. You can have more than three disks as well. Two disks are enough for plain RAID 0 striping and is the exact number you need for RAID 1 mirroring. Four disks are required by RAID 6 and RAID 10.
- 20. Answer: D.** If the time and date keep resetting to a date such as January 1, 2000, chances are that the lithium battery needs to be replaced. Updating the BIOS/UEFI allows the PC to "see" new devices and communicate with them better, but it will not fix the time issue. Updating Windows will not fix this problem, but it should be done often to keep the computer secure. Other date and time synchronization problems can be fixed in the clock settings within the Notification Area. Windows client computers should be configured to synchronize to a time server.

- 21. Answer: B.** The PCI Express (PCIe) x16 expansion slot is used primarily for video. Modems, network interface cards (NICs), and sound cards usually connect to a PCIe x1 slot or, in the uncommon occurrence, to a plain PCI slot.
- 22. Answer: D.** A UPS (uninterruptible power supply) protects computer equipment against surges, spikes, sags, brownouts, and blackouts. Power strips, unlike surge protectors, do not protect against surges. Power inverters are effectively AC-to-DC converters; the power supply acts as a power inverter.
- 23. Answer: B.** System on a chip (SoC) is a type of CPU used in smartphones and tablet computers. 64-bit versions of these are common in mobile devices; they incorporate a variety of functionality within the CPU. LGA 2011 is a type of CPU socket used in PCs. It is designed for Intel Core i7 and other Intel CPUs. LPDDR is a common type of RAM used in mobile devices.
- 24. Answer: D.** RAM is one of the big four (RAM, CPU, motherboard, and video) that can cause the POST to fail. Different RAM errors can cause the POST to make a different series of beeps. Consult your motherboard documentation for more information about the different beep codes. The sound card does not have an effect on the POST. If the power supply has a problem, either the computer will not boot at all (and not even enter POST) or will have intermittent problems—for example, shutting down unpredictably. Hard drive problems result in a variety of errors. Although the POST will complete in these cases, the operating system will not boot.
- 25. Answer: A.** The CPU must be installed correctly for the POST to begin. After the POST is successful, the boot loader (for example, BOOTMGR in Windows) then runs, and then the operating system comes up (that is, if there are no boot loader errors). The CPU is crucial; if installed incorrectly, the system will not POST, making it more difficult to troubleshoot.
- 26. Answers: B and C.** Mobile devices such as smartphones and tablets commonly incorporate ports such as micro USB and Apple's Lightning connector. eSATA (used by external storage devices) and DVI (used by video cards) are commonly found on PCs.
- 27. Answer: C.** RAM is much faster than the rest of the options listed. For instance, if you have PC3-6400 DDR3 RAM (aka DDR3-800), your peak transfer rate is 6,400 MB/s. The rest of the following devices are listed in descending order: hard drive (for example 600

or 1969 MB/s), USB (For example 5 Gbps), and CD-ROM (typically 7.5 MB/s).

28. Answer: C. Home theater PCs (HTPCs) commonly use the microATX form factor. The Mini-ITX form factor is also used for HTPCs. Less commonly used is the ATX form factor due to its large size. Pico-ITX and Nano-ITX are used in handheld computers and are much smaller.

29. Answer: B. The most common CPU cooling method is the heat sink and fan combination. The heat sink helps the heat to disperse away from the CPU, whereas the fan blows the heat down and through the fins; the power supply exhaust fan and possibly additional case fans help the heat escape the case. Heat sink and fan combinations are known as active cooling. The heat sink by itself is called passive cooling; it requires no power but is not enough to cool most desktop PCs. Liquid cooling is a more extreme method used in custom PCs such as gaming computers and possibly audio/video workstations and virtualization machines. It uses a coolant similar to the way an automobile does. Liquid nitrogen would be plain foolish and is not a legitimate answer.

30. Answer: D. S/PDIF is not a video port. It stands for Sony/Philips digital interface format; a digital audio interconnect that can be used with fiber optic TOSLINK connectors or coaxial RCA connectors. DVI is the Digital Visual Interface, one of the most common outputs on PC video cards. HDMI is the High-Definition Multimedia Interface, another common video standard, especially in laptops, home theaters, and HTPCs. DisplayPort is another video standard used by some PCs that has the ability to display high resolutions.

31. Answers: A and D. A computer-aided design/computer-aided manufacturing workstation requires a powerful CPU, high-end video, and as much RAM as possible. The CPU is especially important to run design applications such as AutoCAD. HDMI output is necessary on HTPCs. Surround sound is needed on HTPCs and perhaps gaming computers as well.

32. Answer: B. Near field communication (NFC) allows two mobile devices such as smartphones to transfer data simply by touching them together (or bringing them in very close proximity of each other). A USB port (for example, micro USB) allows for the transfer and synchronization of data, but to and from a mobile device and a PC or laptop. Bluetooth and Wi-Fi enable wireless connectivity but

do not require that the devices touch or be in close proximity.

33. Answer: C. An x16 card is a PCI Express card. It can have one or two PCIe 6-pin power connectors (or 8-pin). Molex 4-pin power connectors are used by secondary devices: fans, monitoring devices, and older IDE hard drives. SATA 15-pin power connections are used by SATA-compliant hard drives and optical drives. P1 24-pin power is the main power connection that the motherboard gets from the power supply.

34. Answer: C. Alternating current (AC) is the standard in the United States; your computer should be connected to a 120V AC outlet. Other countries might use 230V AC connections. Direct current (DC) works inside the computer. The power supply converts between the two! It is in charge of converting the alternating current (AC) drawn from the wall outlet into direct current (DC) to be used internally by the computer. *Neutral current* and *draw current* are not terms you will see on the CompTIA exams.

35. Answers: A, D, and E. Speakers, printers, and displays are output devices. A speaker outputs sound. A printer outputs paper with text and graphics. A display (or monitor) displays video. Keyboards, mice, and touchpads are input devices. Another input device used by mobile devices is the stylus. A stylus is used on mobile devices that incorporate touchscreens. It is a pen-like device used to manipulate the display, similar to a mouse. However, most mobile devices now allow a person to simply use a finger and tap on the screen.

36. Answer: B. You should install an antiglare filter on the monitor. By reducing glare, a person's eyes react better to the display so the customer can use the computer longer without getting a headache. Raising the resolution would make the problem worse. Lowering the resolution might help, but it is only a temporary solution, and not a good one at that. Dimming the lights decreases glare, but studies prove that a person will develop eye strain and headaches quicker when reading a backlit screen in a dark room. Video Graphics Array (VGA) is not an upgrade from DVI—quite the reverse. Besides, changing the video connector probably won't help the problem. The only ways to fix the problem are to: install an antiglare filter; upgrade the monitor to a bigger size and consider positioning it differently, for example, farther away; and recommending that the user take breaks every 30 minutes or so.

37. Answer: B. The *b* in 1000 Mbps stands for bits. 1000 Mbps is 1000

megabits per second or 1 gigabit per second. Remember that the lowercase b is used to indicate bits when measuring network data transfer rates, USB data transfer rates, and other similar serial data transfers. Bytes and megabytes refer to parallel data transfers or the calculation and storage of data where 8 bits equals a standard byte of information. Network data transfer rates are also known as speed or bandwidth.

38. Answer: D. Plenum-rated cable needs to be installed wherever a sprinkler system is not able to spray water. This includes ceilings, walls, and plenums (airways). The reason for this is that the PVCs in regular cable give off toxic fumes in the case of a fire. Plenum-rated cable has a protective covering which burns slower and gives off less toxic fumes.

39. Answer: B. 802.11n runs at a maximum of 600 Mbps. 802.11b runs at a maximum of 11 Mbps. USB 2.0 Hi-Speed runs at a maximum of 480 Mbps. 802.11g has a maximum data transfer rate (DTR) of 54 Mbps. 802.11ac is faster than 802.11n, with typical maximum data transfer rates of 1.7 Gbps.

40. Answer: C. A switch connects computers together in a local area network (LAN). In SOHO networks, it is usually a part of a multifunction network device. In larger networks, the switch is an individual device that has 24, 48, or 96 ports. A modem connects a PC to the Internet by way of a dial-up connection over a plain old telephone service (POTS) line. A router connects one network to another. Though a SOHO multifunction device is often referred to as a *router*, it is not the router portion of that device that connects the computers together in the LAN. A firewall protects all the computers on the LAN from intrusion.

41. Answer: B. 192.168.1.1 is a private Class C address and therefore should have the subnet mask 255.255.255.0, the standard default subnet mask for Class C. 255.255.0.0 is the Class B default subnet mask. 255.0.0.0 is the Class A default subnet mask. 255.255.255.255 is the broadcast address for IP. It is not usable as a subnet mask for typical computers on the LAN.

42. Answer: C. The minimum cable needed for 1000BASE-T networks is Category 5e. Of course, Cat 6 would also work, but it is not the minimum of the listed answers. 1000BASE-T specifies the speed of the network (1000 Mbps), the type (baseband, single shared channel), and the cable to be used (T = twisted pair). Cat 3 is suitable

for 10 Mbps networks. Cat 5 is suitable for 100 Mbps networks. Another type of cable, Category 7, is a newer and even faster version of twisted pair. This is used in 1 Gbps and 10 Gbps networks.

43. Answer: C. The only listed answer that is a public address (needed to get onto the Internet) is 129.52.50.13. All the others are private IPs, meant to be behind a firewall. 127.0.0.1 is the local loopback IP address. 192.168.1.1 is a common Class C private IP address used by SOHO networking devices. 10.52.50.13 is a Class A private address.

44. Answer: C. The Hypertext Transfer Protocol (HTTP) uses port 80 (by default). Port 21 is used by the File Transfer Protocol (FTP). Port 25 is used by the Simple Mail Transfer Protocol (SMTP). Port 110 is used by the POP3 email protocol.

45. Answer: B. Full duplex means that a network adapter (also known as a network interface card or NIC) can transmit and receive data at the same time. A 1000 Mbps network running in full-duplex mode can transfer 2000 Mbps, but this is because transmitting and receiving have been combined, not because speed has been increased. A network adapter that can both transmit or receive data but not at the same time is transmitting in half-duplex mode.

46. Answers: A, B, and D. Twisted pair, coaxial, and Category 7 cable are all examples of network cables with a copper medium. They all send electricity over copper wire. Multimode is a type of fiber optic cable; it uses light to send data over a glass or plastic medium. Twisted pair is the most common type of cabling used in today's networks.

47. Answers: B and C. Shielded twisted pair (STP) and fiber optic can protect from EMI. However, unshielded twisted pair (UTP) cannot. Unless otherwise mentioned, Category 6 cable is UTP. STP is shielded twisted pair. Unlike UTP (unshielded twisted pair), STP provides an aluminum shield that protects from EMI. UTP and coaxial have no such protection. Fiber optic uses a different medium altogether, transmitting light rather than electricity; therefore, EMI cannot affect fiber optic cables.

48. Answers: A and B. To get on the Internet, the DNS server address is required so that the computer can get the resolved IP addresses from the domain names that are typed in. The gateway address is necessary to get outside the network. Email server information is not necessary if the person is just looking to get onto the Internet. A DHCP server address is not necessary either; however, it is an easier

method. The beauty of DHCP is that you don't need to know the DHCP server's address to acquire an IP address. The domain name for your network is normally not needed, either; it is only necessary if you want to add the computer to the organization's domain.

49. Answer: C. The DNS (Domain Name System) protocol translates a computer name into an IP address. Whenever you type a web server name such as www.davidlprowse.com, a DNS server translates that name to its corresponding IP address. The Transmission Control Protocol (TCP) is used to send data from one computer to another utilizing a guaranteed delivery system. User Datagram Protocol (UDP), on the other hand, sends data in a streaming format, without the need for guaranteed delivery. The File Transfer Protocol (FTP) allows you to send files between computers over the Internet.

50. Answer: B. Cellular WAN uses a phone or other mobile device to send data over standard cellular connections. By themselves, the other options don't offer a direct connection to the Internet. Infrared is used more often for very short distance connections, allowing data to be "beamed" from one device to another. Bluetooth is also for short distances, but not as short as infrared. Bluetooth headsets are commonly used with smartphones. 802.11n is a Wi-Fi technology for the LAN.

51. Answer: D. 192.168.0.1 is the only suitable gateway address. Remember that the gateway address must be on the same network as the computer. In this case, the network is 192.168.0, as defined by the 255.255.255.0 subnet mask. As to the other answers: 192.168.1.100 is on the 192.168.1.0 network; so is 192.168.1.1. 192.168.10.1 is on the 192.168.10.0 network. Don't forget that a zero at the end of an IP address denotes the network number.

52. Answer: A. The service set identifier (SSID) is the name of the wireless network. This is the name you look for when locating a wireless network. WPA stands for Wi-Fi Protected Access, a secure connectivity protocol for wireless networks. The demilitarized zone (DMZ) is an area between the LAN and the Internet that often houses web, email, and FTP servers. The Dynamic Host Configuration Protocol (DHCP) is a service that assigns IP addresses automatically to computers and other devices.

53. Answer: A. The LC connector is used by fiber optic cabling. Other fiber connectors include SC and ST. RJ45 is the connector used by twisted-pair networks. RG-6 is the cable used by cable Internet and

TV; an F-connector is attached to the ends of an RG-6 cable. RJ11 is the standard phone line connector.

54. Answer: C. The Domain Name System (DNS) protocol uses port 53 by default. FTP uses port 21. SMTP uses port 25. HTTP uses port 80.

55. Answers: B, C, and E. WiMAX, satellite, and cellular are examples of wireless Internet services. Cable Internet, DSL, and fiber optic all use wired connections.

56. Answer: B. A wide area network (WAN) is a network in which two or more LANs are connected together over a large geographic distance—for example, between two cities. The WAN requires connections to be provided by a telecommunications or data communications company. A personal area network (PAN) is a small network made up of short-distance devices such as Bluetooth. WLAN stands for wireless local area network. This is the name that the IEEE uses for their 802.11 standards. That is because the term Wi-Fi, though widely used, is copyrighted. A MAN is a metropolitan (or municipal) area network; it can connect two or more LANs together but does it in a small city-based area.

57. Answer: A. Network-attached storage (NAS) devices store data for network use. They connect directly to the network. Network address translation (NAT) is used on routers to take a group of computers on a private LAN and connect them to the Internet by using a single public IP. NAC stands for network access control, a group of technologies designed to allow or deny access by authenticating users. IaaS stands for infrastructure as a service, a cloud-based technology by which organizations can offload their network infrastructure to a third-party. Threw in a tougher one there—have to keep you on your toes!

58. Answer: C. Use an RJ45 crimper tool to permanently attach RJ45 plugs to the end of a cable. A tone and probe kit is used to locate individual phone lines, but it can also be used with network lines. The better tool, however, for testing and locating is a continuity cable tester. A multimeter is great for testing AC outlets and for testing wires inside a computer, but it is not often used in networking applications.

59. Answer: D. The Remote Desktop Protocol (RDP) uses port 3389. This protocol allows one computer to take control of another remote system. Port 80 is used by HTTP. Port 110 is used by POP3. Port

443 is used by HTTP Secure or HTTPS, a protocol used during secure web sessions.

- 60. Answer: A.** The Fn (Function) key is used for a variety of things, including toggling between the built-in LCD screen and an external monitor/TV. The Fn key could be a different color (for example, blue) and offers a sort of “second” usage for keys on the laptop. Ctrl may also have secondary functions but is otherwise used the same as on a PC’s keyboard. Alt and Shift work in the same manner as they do on a PC.
- 61. Answer: B.** The liquid crystal display (LCD) is the most common type on a laptop. You might also see LED-backlit LCDs. Cathode ray tubes (CRTs) were the predecessor to flat-panel monitors. They were rarely used in laptops and only way back in the 1980s. CRT monitors were more commonly used with PCs. Organic LED screens are not popular on laptops as of the writing of this book. VGA is not a type of display; it is a video standard that uses a 15-pin connector. It is the predecessor to today’s standards such as DVI and HDMI.
- 62. Answer: C.** A failure that occurs due to the internal feed mechanism stopping is known as a paper jam. For example, an HP LaserJet might show an error code 13.1 on the display, which means that there is a paper jam at the paper feed area. You would want to verify that the paper trays are loaded and adjusted properly. A No Connectivity message would mean that the printer is not currently connected to the network. A corrupt driver loaded on a workstation would cause any print job from that computer either to fail or to print nonsense. A Power Cycle message means that the self-diagnostic program has encountered a problem and is telling you to shut down the printer and turn it back on. This resets the printer, which can fix many of the issues that can occur.
- 63. Answer: A.** Although Ni-Cd and NiMH batteries have been used on laptops, the most commonly used type of battery as of the writing of this book is lithium-ion. Some laptops, and especially other small mobile devices, use lithium-ion polymer-based batteries. Fuel cells are used in vehicles, vending machines, and highway road signs, but not laptops.
- 64. Answer: C.** Sometimes, the volume wheel on older laptops can be hard to find and may be set in the lowest position (which might still make a slight audible noise). On newer laptops, the volume is usually controlled by pressing the Fn key and the Volume Up or

Volume Down key simultaneously. Installing a new sound driver isn't necessary yet. Always check the physical volume first, and then check if the volume is low or the sound is muted in Windows.

Tapping the speakers is an interesting idea, but it has no place in this discussion. If a speaker is loose, it often makes scratchy noises; however, speakers rarely become loose on today's laptops.

Reinstalling Windows is the last thing you want to do. Check the simple solutions when troubleshooting problems such as no audio or video.

65. Answers: C. If a motherboard were just replaced and the system overheats when booted, then there's a good chance that thermal paste was not applied to the CPU. When you install a new motherboard, the CPU must be removed from the old board and installed to the new one, or a new CPU needs to be installed. Either way, the heat sink must come off. Whenever a heat sink is connected (or reconnected) to a CPU, thermal compound (also known as thermal paste) should be applied; otherwise overheating can easily occur. The GPU is the video card's processor; it is not quite possible for this to be incompatible with the CPU. It is possible for the video card to be incompatible with the expansion bus slots on the new motherboard, though. Even if the new motherboard's firmware has not been updated, the system should not overheat. If the case fan fails, the computer should not overheat. The CPU will still have its own fan, and the power supply will still be exhausting hot air.

66. Answer: A. Laptops have airflow underneath them; if the unit is not on a flat surface, that airflow will be reduced or stopped altogether, leading to component damage. The freezer is not a good idea because condensation could build up inside the unit. A fan won't do much good unless the laptop is on a flat surface, and although it is plausible to keep the laptop turned off, it negates the reason for using the laptop.

67. Answers: A and B. Make sure to purchase an AC adapter that is a true replacement. This can be found on the laptop manufacturer's website. When you enter your model number, the website will tell you everything you need to know about current, voltage, and connector type. The battery and AC adapter do need to work in conjunction with each other; because of this, they both need to be compatible with the laptop. The AC adapter does several things, including reducing voltage and converting from AC to DC, but it

does not invert the signal. However, there is an inverter in the laptop; it powers the display. This question is not referring to that, but if you are ever troubleshooting a display, the inverter type is very important.

- 68. Answer: B.** The Screen key (also known as the display toggle) is one of the keys available when you use the Function (Fn) key. This enables you to switch between the laptop display and an external display (or if you wanted to use both). If the display toggle doesn't work, then try another external monitor. No other key combinations perform this task.
- 69. Answer: B.** Laser printers use toner cartridges. Inkjet printers use ink cartridges. Dot matrix printers (also known as impact printers) use a ribbon. Thermal printers use specially coated paper that is heated.
- 70. Answer: C.** Laser printers use large amounts of electricity, which in turn could quickly drain the battery of the UPS. They should be plugged into their own individual power strips.
- 71. Answer: B.** Print a test page after installation. If the test page prints properly, it should be unnecessary to print a page in Word. Restarting the spooler is not needed if the printer has just been installed. The spooler should already be running. If the spooler has failed, that would be a separate troubleshooting scenario. Separator pages are not necessary; they are optional and can be configured in the Printer Properties window.
- 72. Answer: A.** When printing "duplex," it means that you are printing on both sides of the paper (if the printer has that capability). Some laser printers can do this, but it creates a longer total paper path, which leads to more frequent paper jams. Collation is when documents are printed in a standard order, usually numerically. Full-duplex in networking is when information can be sent and received simultaneously. A printer can have a full-duplex connection to the network, but this question is referring to printing in duplex. Printing to file is a process that can be performed by Windows. Instead of selecting a physical printer when printing a document, Windows prints to a special file and saves that file to a location of your choice with a .prn extension.
- 73. Answer: B.** Regular paper can be used on all the listed printers except for thermal printers, which use specially coated paper that is heated to create the image. A dot matrix might use tractor feed paper,

but that is standard for many dot matrix printers; it is also still considered regular paper. A laser printer or dot matrix printer might use two-part paper, but two-part paper isn't necessary for laser printers or dot matrix printers to operate; thermal printers won't work unless you use specially coated paper. Inkjet printers normally use standard copy paper for printing.

74. Answer: D. Heat is the number-one enemy to a thermal printer. If a thermal printer or the thermal paper is kept in a location where the temperature is too high, it could cause failure of the printer and damage to the paper. Excessive moisture can cause rubber rollers and separation pads to fail over time. Electrostatic discharge (ESD) is always a foe, but only if you are working inside the printer. Dirt can clog up the works over time in any device. But by far, heat is what you have to watch for with thermal printers.

75. Answer: E. In the laser printing process, the cleaning stage happens last. The laser printing process includes the following steps in order: Processing, charging, exposing, developing, transferring, fusing, and cleaning.

76. Answer: C. The dot matrix is a type of impact printer. It uses a printhead to physically impact the ribbon and transfer ink to the paper. Laser printers apply toner to paper through varying voltages. Inkjet printers spray ink from a cartridge onto the paper. Thermal paper is specially coated and forms text when it is heated properly.

77. Answer: C. After you install the driver for the printer locally, you can then take control of it by going to the properties of the printer and accessing the Ports tab. Then click the Add Port button and select the Standard TCP/IP Port option. You will have to know the IP address of the printer or the computer that the printer is connected to.

78. Answer: B. After installing a printer, it is important to calibrate it for color and orientation, especially if you are installing a color laser printer or an inkjet printer. These calibration tools are usually built in to the printer's software and can be accessed from Windows, or you can access them from the printer's display. If a toner cartridge needs to be cleaned, it probably has a leak and should be replaced. The fusing assembly needs to be changed only when it fails. Many printers will give you an indication of when the fuser is at 20 percent life and needs to be replaced soon. If the fuser fails, the toner will fail to stick to the paper. The primary corona wire can be cleaned; it

is near the drum. This can help with other types of print quality problems, such as lines and smearing.

79. Answers: A and C. Most laptops have a special function key (for example F12) which can enable or disable the Wi-Fi connection just by pressing it. Also, a wireless network can be “forgotten” in the operating system. If this happens, the laptop would have to be reconnected to the wireless network. After you are connected to a network, you can typically use whatever web browser you want, as long as the browser is compatible with the operating system in question. Client computers (such as laptops) normally obtain their IP addresses automatically from a DHCP server, so this is not a likely problem.

80. Answer: D. The most likely answer in this scenario is that the network cable is disconnected. If the desktop computer is using a wired connection, then it is most likely a twisted pair Ethernet connection. When this cable is connected to the computer on one end and to a switch or other central connecting device on the other end, it initiates a network connection over the physical link. This then causes the network adapter’s link light to light up. The link light is directly next to the RJ45 port of the network adapter. The corresponding port on the switch (or other similar device) is also lit. If the cable is disconnected, the link light becomes unlit, though there are other possibilities for this link light to be dark; for example, if the computer is off or if the switch port is disabled, and so on. The Wi-Fi connection might have its own link light; for example, on the front of a laptop, but this is separate from the wired connection link light. Although it is unlikely, a malfunctioning USB controller or port could possibly be the cause of the unlit link light, but only if the computer is using a USB-based network adapter. Normally, the network adapter (and corresponding RJ45 port) on a PC is either integrated into the motherboard or is installed as a PCIe x1 adapter card. If the system doesn’t POST properly, it usually means a problem with the RAM, video, or other primary component of the system. Generally, a network adapter will not cause a failure during POST.

Chapter Three. 220-901 Practice Exam B

Now let's kick it up a notch. This second 220-901 exam could be considered an intermediate practice test. I'll be mixing in some more difficult questions this time. You may have noticed that the first exam had some questions grouped together by A+ domain. This exam will be more random.

Again, the goal here is to make sure you understand all of the concepts before moving on to the next test. If you didn't already, I suggest taking a break between exams. If you just completed the first exam, give yourself a half-hour or so before you begin this one. If you didn't score 90 percent or higher on Exam A, go back and study; then retake Exam A until you pass with 90 percent or higher.

Note

If you feel that you are having trouble with more than 25 percent of the concepts within this exam and the first exam, then I suggest purchasing the main A+ Exam Cram study guide, or even considering an actual hands-on A+ course, before continuing on with this book.

Write down your answers and check them against the answer key that immediately follows the exam. After the answer key, you will find explanations for all of the answers. Good luck!

Practice Questions

1. Which of the following IP addresses would a technician see if a computer running Windows is connected to a multifunction network device and is attempting to obtain an IP address automatically but is not receiving an IP address from the DHCP server?
 - A. 172.16.10.10
 - B. 192.168.0.10
 - C. 169.254.10.10
 - D. 192.168.10.10

Quick Answer: [59](#)

Detailed Answer: [60](#)

2. 80 mm and 120 mm are common sizes for which type of PC component?

- A. Case fans
- B. CPUs
- C. Heat sinks
- D. Memory modules

Quick Answer: [59](#)

Detailed Answer: [60](#)

3. What is the maximum number of devices that can be daisy-chained to USB?

- A. 127
- B. 63
- C. 24
- D. 255

Quick Answer: [59](#)

Detailed Answer: [60](#)

4. An exclamation point next to a device in the Device Manager indicates which of the following?

- A. A driver is not properly installed for this device.
- B. The device is disabled.
- C. The driver is not digitally signed.
- D. The device driver needs to be upgraded.

Quick Answer: [59](#)

Detailed Answer: [60](#)

5. Beep codes are generated by which of the following?

- A. CMOS
- B. RTC
- C. POST
- D. Windows

Quick Answer: [59](#)

Detailed Answer: [60](#)

6. A laptop you are troubleshooting will not display any video through the laptop's screen or through external monitors. Which of the

following should be replaced?

- A. Inverter
- B. Video card
- C. LCD
- D. Drivers

Quick Answer: [59](#)

Detailed Answer: [60](#)

7. Which of the following indicates that a printer is network-ready?

- A. An RJ11 jack
- B. A USB connector
- C. An RJ45 jack
- D. An SCSI connector

Quick Answer: [59](#)

Detailed Answer: [60](#)

8. You just turned off a printer to maintenance it. Which of the following should you be careful of when removing the fuser?

- A. The fuser being hot
- B. The fuser being wet
- C. The fuser being fragile
- D. The fuser releasing toner

Quick Answer: [59](#)

Detailed Answer: [61](#)

9. Which of the following connectors is used for musical equipment?

- A. MIDI
- B. HDMI
- C. DVI
- D. DisplayPort

Quick Answer: [59](#)

Detailed Answer: [61](#)

10. Which of the following tools is not used as often as a Phillips screwdriver but is sometimes used to remove screws from the outside of a computer case or from within a laptop?

- A. Monkey wrench
- B. Torx screwdriver
- C. Channel lock
- D. Pliers

Quick Answer: [59](#)

Detailed Answer: [61](#)

11. Which of the following is the primary advantage of selecting a 64-bit operating system over a 32-bit operating system?

- A. The ability to use software-based Data Execution Prevention (DEP)
- B. The ability to use unsigned drivers
- C. The ability to access more than 4 GB of RAM
- D. The ability to run multiple 16-bit programs in separate memory spaces

Quick Answer: [59](#)

Detailed Answer: [61](#)

12. Moving your CPU's speed beyond its normal operating range is called _____.

- A. Overclocking
- B. Overdriving
- C. Overpowering
- D. Overspeeding

Quick Answer: [59](#)

Detailed Answer: [61](#)

13. Which of the following is the most important piece of information needed to connect to a specific wireless network?

- A. Channel
- B. MAC address
- C. SSID
- D. Administrator password

Quick Answer: [59](#)

Detailed Answer: [61](#)

14. Which of the following statements describes why the display on a

laptop gets dimmer when the power supply from the AC outlet is disconnected?

- A. The laptop cannot use full brightness when on battery power.
- B. Power management settings on the laptop are configured for power-saving.
- C. To operate properly, laptop displays require an alternating current power source.
- D. Security settings on the laptop are configured to dim the display.

Quick Answer: [59](#)

Detailed Answer: [61](#)

15. Which of the following statements describe advantages of using the Dynamic Host Configuration Protocol (DHCP)? (Select the two best answers.)

- A. IP addresses can be managed from a central location.
- B. The network speed can automatically adjust based on the type of traffic being generated.
- C. The hosts file on the computer can be validated for proper entries.
- D. Media access control addresses can be changed.
- E. Computers can automatically get new addressing when moved to a different network segment.

Quick Answer: [59](#)

Detailed Answer: [62](#)

16. Which of the following storage technologies is used by hard disk drives?

- A. Magnetic
- B. Optical
- C. Impact
- D. Solid-state

Quick Answer: [59](#)

Detailed Answer: [62](#)

17. On which type of computer is RAM the most important?

- A. Gaming PC

- B.** Virtualization workstation
- C.** AV workstation
- D.** HTPC

Quick Answer: [59](#)

Detailed Answer: [62](#)

18. A client brings in a printer that is giving a paper-feed error. Which of the following is the most likely cause?

- A.** The separation pad
- B.** The developing rollers
- C.** The paper tray
- D.** The pickup rollers

Quick Answer: [59](#)

Detailed Answer: [62](#)

19. Which of the following is the default port for HTTPS?

- A.** Port 25
- B.** Port 80
- C.** Port 143
- D.** Port 443

Quick Answer: [59](#)

Detailed Answer: [62](#)

20. What is the maximum distance at which a Class 2 Bluetooth device can receive signals from a Bluetooth access point?

- A.** 100 meters
- B.** 10 meters
- C.** 5 meters
- D.** 1 meter

Quick Answer: [59](#)

Detailed Answer: [62](#)

21. Which of the following wireless networking standards operates at 5 GHz only?

- A.** 802.11a
- B.** 802.11b

C. 802.11g

D. 802.11n

Quick Answer: [59](#)

Detailed Answer: [62](#)

22. Which of the following types of RAM has a peak transfer of 12,800 MB/s?

A. DDR3-800

B. DDR2-1600

C. DDR3-1600

D. DDR2-800

Quick Answer: [59](#)

Detailed Answer: [63](#)

23. Which of the following types of printers uses a print head, ribbon, and tractor feed?

A. Laser

B. Impact

C. Inkjet

D. Thermal

Quick Answer: [59](#)

Detailed Answer: [63](#)

24. Which of the following is a possible symptom of a failing CPU?

A. CPU is beyond the recommended voltage range.

B. Computer won't boot.

C. BIOS reports low temperatures within the case.

D. Spyware is installed into the browser.

Quick Answer: [59](#)

Detailed Answer: [63](#)

25. Which of the following cable types is not affected by EMI but requires specialized tools to install?

A. Cat 6

B. STP

C. Fiber optic

D. Coaxial

Quick Answer: [59](#)

Detailed Answer: [63](#)

26. Setting an administrator password in the BIOS accomplishes which of the following?

- A.** Prevents a user from rearranging the boot order
- B.** Prevents a user from reading email
- C.** Prevents a virus from infecting the MBR
- D.** Prevents an attacker from opening the case

Quick Answer: [59](#)

Detailed Answer: [63](#)

27. Which of the following functions is performed by the external power supply of a laptop?

- A.** Increases voltage
- B.** Stores power
- C.** Converts DC power to AC power
- D.** Converts AC power to DC power

Quick Answer: [59](#)

Detailed Answer: [64](#)

28. How many pins would you see in a high-quality printhead on a dot matrix printer?

- A.** 24
- B.** 15
- C.** 8
- D.** 35

Quick Answer: [59](#)

Detailed Answer: [64](#)

29. What is an LCD display's contrast ratio defined as?

- A.** Power consumption
- B.** Display resolution and brightness
- C.** The brightest and darkest outputs
- D.** Power savings

Quick Answer: [59](#)

Detailed Answer: [64](#)

30. Which of the following tools can protect you in the case of a surge?

- A. Torx screwdriver
- B. Antistatic strap
- C. Voltmeter
- D. Antistatic mat

Quick Answer: [59](#)

Detailed Answer: [64](#)

31. Which of the following connectors can have audio *and* video pass through it?

- A. VGA
- B. RGB
- C. DVI
- D. HDMI

Quick Answer: [59](#)

Detailed Answer: [64](#)

32. Which of the following devices limits network broadcasts, segments IP address ranges, and interconnects different physical media?

- A. Switch
- B. WAP
- C. Firewall
- D. Router

Quick Answer: [59](#)

Detailed Answer: [64](#)

33. You just upgraded the CPU. Which of the following issues can make your computer shut down automatically after a few minutes? (Select the best answer.)

- A. Wrong CPU driver.
- B. Wrong voltage to the CPU.
- C. Incorrect CPU has been installed.
- D. The CPU has overheated.

Quick Answer: [59](#)

Detailed Answer: [64](#)

34. Which of the following addresses is a valid IPv4 address for a network host?

- A.** 127.0.0.1
- B.** 169.254.0.0/16
- C.** 172.17.58.254
- D.** 255.10.15.7

Quick Answer: [59](#)

Detailed Answer: [65](#)

35. You want to upgrade memory in your computer. Which of the following is user-replaceable memory in a PC?

- A.** CMOS
- B.** BIOS
- C.** DRAM
- D.** SRAM
- E.** ROM

Quick Answer: [59](#)

Detailed Answer: [65](#)

36. Which of the following IP addresses is private?

- A.** 11.58.254.169
- B.** 169.255.10.41
- C.** 172.31.1.1
- D.** 192.169.0.1

Quick Answer: [59](#)

Detailed Answer: [65](#)

37. Which of the following is the local loopback IPv6 address?

- A.** 127.0.0.1
- B.** ::1
- C.** 192.168.0.0
- D.** FE80::/10

Quick Answer: [59](#)

Detailed Answer: [65](#)

38. Which of the following statements is correct concerning IPv6 addresses?

- A. They cannot be used with IPv4.
- B. They are supported by all routers.
- C. They represent addressing using 128 bits.
- D. They require fiber optic connections.

Quick Answer: [59](#)

Detailed Answer: [65](#)

39. Which of the following operating CPU temperatures is typical?

- A. 60° Fahrenheit
- B. 60° Celsius
- C. 72° Fahrenheit
- D. 72° Celsius

Quick Answer: [59](#)

Detailed Answer: [65](#)

40. Which of the following printer technologies should be used to print payroll checks on paper forms that have a carbon backing?

- A. Impact
- B. Laser
- C. Inkjet
- D. Thermal

Quick Answer: [59](#)

Detailed Answer: [66](#)

41. Which of the following tools can be used to test an AC outlet?

(Select the two best answers.)

- A. Multimeter
- B. PSU tester
- C. Receptacle tester
- D. Loopback plug

Quick Answer: [59](#)

Detailed Answer: [66](#)

42. Which of the following is *not* a configuration that can be made in the BIOS/UEFI?

- A. Boot sequence
- B. Temperature thresholds
- C. Overclocking
- D. Install drivers
- E. Intrusion detection

Quick Answer: [59](#)

Detailed Answer: [66](#)

43. Which of the following traits and port numbers are associated with POP3?

- A. Receives inbound email on port 110
- B. Receives inbound email on port 25
- C. Sends outbound email on port 110
- D. Sends outbound email on port 25

Quick Answer: [59](#)

Detailed Answer: [66](#)

44. Which type of cable should be used to connect a laptop directly to a PC?

- A. Cat 6 patch cable
- B. Parallel cable
- C. IEEE 1394b cable
- D. Cat 5e crossover cable

Quick Answer: [59](#)

Detailed Answer: [66](#)

45. In order to perform a network installation of Windows, which of the following must be supported by the computer's network interface card?

- A. PXE
- B. PCI
- C. PCL
- D. PnP

Quick Answer: [59](#)

Detailed Answer: [66](#)

46. Which of the following is a unique characteristic of a dual-core

processor versus a single-core processor?

- A. A dual-core processor has two cores, with separate caches, on the same physical chip.
- B. A dual-core processor has several unique cores, with the same cache, on two different chips.
- C. A dual-core processor uses higher voltage than a single-core processor.
- D. A dual-core processor requires more RAM to function than a single-core processor.

Quick Answer: [59](#)

Detailed Answer: [67](#)

47. Which of the following devices is the least likely to be replaced on a laptop?

- A. CPU
- B. RAM
- C. PC Card
- D. Keyboard

Quick Answer: [59](#)

Detailed Answer: [67](#)

48. If your “bandwidth” is 1000 Mbps, how many bits are you sending/receiving? (Select the two best answers.)

- A. 100,000,000 bits per minute
- B. 1000 bits per second
- C. 1,000,000,000 bits per second
- D. 1 gigabit per second

Quick Answer: [59](#)

Detailed Answer: [67](#)

49. Which of the following can send data the farthest?

- A. Multi-mode fiber
- B. Single-mode fiber
- C. STP
- D. Coaxial

Quick Answer: [59](#)

Detailed Answer: [67](#)

50. You need to expand the peripherals of a computer, but the system doesn't have enough ports. Which type of card should be installed?

- A. Modem
- B. Network adapter
- C. USB card
- D. TV tuner card

Quick Answer: [59](#)

Detailed Answer: [67](#)

51. Which of the following is the typical speed of a SATA hard drive?

- A. 1000 Mbps
- B. 3.1 GHz
- C. 8 GB
- D. 7200 RPM

Quick Answer: [59](#)

Detailed Answer: [67](#)

52. Which of the following best describes the differences between a switch and a router?

- A. A switch interconnects devices on the same network so that they can communicate; a router interconnects one or more networks.
- B. A router broadcasts all data packets that are sent on the network; a switch transmits data directly to the device.
- C. A switch broadcasts all data packets that are sent on the network; a router transmits data directly to the device.
- D. A switch interconnects one or more networks; a router interconnects devices on a network.

Quick Answer: [59](#)

Detailed Answer: [67](#)

53. A group of users in ABC Corp. needs to back up several gigabytes of data daily. Which of the following is the best media for this scenario?

- A. DVD

- B.** Dual-layer DVD
- C.** USB flash drive
- D.** DLT

Quick Answer: [59](#)

Detailed Answer: [67](#)

54. You are required to rip the contents of a CD to a compressed file format that can be read easily on PCs, Linux computers, or Macs. Which format should you select?

- A.** .AAC
- B.** .WMA
- C.** .MP3
- D.** .MOV

Quick Answer: [59](#)

Detailed Answer: [68](#)

55. You need to replace and upgrade the memory card in a smartphone. Which type of memory is most likely used by the smartphone?

- A.** SSD
- B.** CF
- C.** USB flash drive
- D.** SD

Quick Answer: [59](#)

Detailed Answer: [68](#)

56. Your organization relies heavily on its server farm for resources and is less reliant on the client computers. Which type of client computer is most likely used by the organization?

- A.** Virtualization workstation
- B.** Client/server
- C.** Thin client
- D.** Thick client

Quick Answer: [59](#)

Detailed Answer: [68](#)

57. Which of the following statements describes the respective functions of the two corona wires in a laser printer? (Select the two

best answers.)

- A. Conditions the drum to be written to
- B. Transfers toner from the drum to the paper
- C. Fuses the toner to the paper
- D. Cleans the drum

Quick Answer: [59](#)

Detailed Answer: [68](#)

58. After a blackout, the power comes back on, causing a surge to occur on all the computers and equipment in the office. Your coworker's laptop display doesn't come on. However, if you look closely at the display, you can see that Windows is running, but very dimly. Which of the following statements describes a potential cause of this problem?

- A. The inverter has been shorted out.
- B. The power supply has failed.
- C. The display is not getting power.
- D. The display driver has failed.

Quick Answer: [59](#)

Detailed Answer: [68](#)

59. Which of the following tools should be used to test a 24-pin ATX 12v power connector?

- A. Torx screwdriver
- B. Multimeter
- C. Receptacle tester
- D. Tone and probe kit

Quick Answer: [59](#)

Detailed Answer: [68](#)

60. Which of the following uses port 427?

- A. FTP
- B. DNS
- C. SLP
- D. HTTPS
- E. RDP

Quick Answer: [59](#)

Detailed Answer: [68](#)

61. Which of the following ports is used by AFP?

A. 22

B. 23

C. 80

D. 143

E. 445

F. 548

Quick Answer: [59](#)

Detailed Answer: [68](#)

62. Which of the following is a common CPU for a tablet computer?

A. Core i7

B. Phenom II

C. ARM

D. FM2

Quick Answer: [59](#)

Detailed Answer: [69](#)

63. Which of the following is a common charging port on an Android smartphone?

A. Standard A USB

B. Mini-A USB

C. Standard B USB

D. Micro-B USB

Quick Answer: [59](#)

Detailed Answer: [69](#)

64. Which of the following does a laptop have, yet a tablet does not?

A. Touchpad

B. Display

C. Keyboard

D. Wireless network adapter

Quick Answer: [59](#)

Detailed Answer: [69](#)

65. At the beginning of the workday, a user informs you that her computer is not working. When you examine the computer, you notice that nothing is on the display. Which of the following should be done first?

- A. Check whether the monitor is connected to the computer.
- B. Check whether the monitor is on.
- C. Check whether the computer is plugged in.
- D. Reinstall the video driver.

Quick Answer: [59](#)

Detailed Answer: [69](#)

66. A customer reports that when his computer is turned on the screen is blank except for some text and a flashing cursor. He also tells you that there are numbers counting upward when the computer beeps and then freezes. Which of the following is the most likely cause of this problem?

- A. The computer has faulty memory.
- B. There is a corrupt MBR.
- C. The OS is corrupted.
- D. The computer is attempting to boot off of the network.

Quick Answer: [59](#)

Detailed Answer: [69](#)

67. Joey's computer was working fine for weeks yet suddenly it cannot connect to the Internet. Joey runs the command ipconfig and sees that the IP address his computer is using is 169.254.50.68. Which of the following statements describes the most likely issue?

- A. The computer cannot access the DHCP server.
- B. The computer cannot access the POP3 server.
- C. The computer cannot access the DNS server.
- D. The computer cannot access the WINS server.

Quick Answer: [59](#)

Detailed Answer: [69](#)

68. Which of the following could cause a ghosted image on the paper outputted by a laser printer?

- A. Transfer corona wire
- B. Primary corona wire
- C. Pickup rollers
- D. Photosensitive drum

Quick Answer: [59](#)

Detailed Answer: [69](#)

69. Mary installed a new sound card and speakers; however, she cannot get any sound from the speakers. Which of the following statements describes the most likely cause? (Select all that apply.)

- A. The speaker power is not plugged in.
- B. The sound card driver is not installed.
- C. The sound card is plugged into the wrong slot.
- D. The speaker connector is in the wrong jack.

Quick Answer: [59](#)

Detailed Answer: [69](#)

70. A laptop with an integrated 802.11 n/g card is unable to connect to any wireless networks. Just yesterday the laptop was able to connect to wireless networks. Which of the following statements describes the most likely cause?

- A. The wireless card drivers are not installed.
- B. The wireless card is disabled in BIOS.
- C. The wireless card firmware requires an update.
- D. The wireless hardware switch is turned off.

Quick Answer: [59](#)

Detailed Answer: [70](#)

71. The IP address of Davidlprowse.com is 63.25.148.73. You can ping the IP address 63.25.148.73, but you cannot ping Davidlprowse.com. Which of the following statements describes the most likely cause?

- A. Davidlprowse.com is down.
- B. The DHCP server is down.
- C. The DNS server is down.
- D. The AD DS server is down.

Quick Answer: [59](#)

Detailed Answer: [70](#)

72. A newly built computer runs through the POST, but it doesn't recognize the specific CPU that was just installed. Instead, it recognizes it as a generic CPU. Which of the following is the first thing you should check?

- A.** Whether the CPU is seated properly
- B.** The version of the firmware for the motherboard
- C.** Whether it is the correct CPU for the motherboard
- D.** The version of Windows installed

Quick Answer: [59](#)

Detailed Answer: [70](#)

73. Which of the following commands displays a network interface card's MAC address?

- A.** Ping
- B.** Ipconfig/all
- C.** Ipconfig
- D.** Ipconfig/release

Quick Answer: [59](#)

Detailed Answer: [70](#)

74. A customer reports that print jobs sent to a local printer are printing as blank pieces of paper. Which of the following can help you to determine the cause?

- A.** Reload the printer drivers
- B.** Stop and restart the print spooler
- C.** Replace the printer cable
- D.** Print an internal test page

Quick Answer: [59](#)

Detailed Answer: [70](#)

75. Signal strength for a laptop's wireless connection is low (yellow in color and only one bar). The laptop is on the first floor of a house. The wireless access point (WAP) is in the basement. Which of the following can improve signal strength? (Select the two best answers.)

- A.** Use a WAP signal booster.

- B.** Move the WAP from the basement to the first floor.
- C.** Download the latest driver for the NIC.
- D.** Download the latest BIOS for the laptop.

Quick Answer: [59](#)

Detailed Answer: [70](#)

76. Which of the following is the first thing you should check when a computer cannot get on the Internet?

- A.** NIC driver
- B.** Disk defrag
- C.** Patch cable
- D.** Firewall settings

Quick Answer: [59](#)

Detailed Answer: [71](#)

77. You just built a PC, and when it first boots you hear some beep codes. If you don't have the codes memorized, which of the following are the best devices to examine first? (Select the two best answers.)

- A.** RAM
- B.** CD-ROM
- C.** Video card
- D.** CPU

Quick Answer: [59](#)

Detailed Answer: [71](#)

78. Which of the following are examples of virtual printing? (Select the two best answers.)

- A.** Start printing after last page is spooled
- B.** Print to XPS
- C.** Print to a printer pool
- D.** Print to PRN

Quick Answer: [59](#)

Detailed Answer: [71](#)

79. A coworker needs to print to a printer from a laptop running Windows. The printer has a USB and an Ethernet connector. Which

of the following is the easiest way to connect the printer to the laptop?

- A. Use the Thunderbolt port.
- B. Use the network connection.
- C. Use the USB connector.
- D. Use the Ethernet connector.

Quick Answer: [59](#)

Detailed Answer: [71](#)

80. You have had several support requests for a PC located in a school cafeteria kitchen that is experiencing a problem. You have already reseated the PCIe and PCI cards and replaced the hard drive in the PC. Computers located in the business office or the classrooms have not had the same problem as the computer in the cafeteria. Which of the following is the most likely issue?

- A. Excessive heat
- B. Faulty RAM
- C. 240 V outlets
- D. Power brownouts

Quick Answer: [59](#)

Detailed Answer: [71](#)

Quick-Check Answer Key

- [1.](#) C
- [2.](#) A
- [3.](#) A
- [4.](#) A
- [5.](#) C
- [6.](#) B
- [7.](#) C
- [8.](#) A
- [9.](#) A
- [10.](#) B
- [11.](#) C
- [12.](#) A

- 13. C
- 14. B
- 15. A, E
- 16. A
- 17. B
- 18. D
- 19. D
- 20. B
- 21. A
- 22. C
- 23. B
- 24. A
- 25. C
- 26. A
- 27. D
- 28. A
- 29. C
- 30. B
- 31. D
- 32. D
- 33. D
- 34. C
- 35. C
- 36. C
- 37. B
- 38. C
- 39. B
- 40. A
- 41. A, C
- 42. D
- 43. A
- 44. D
- 45. A

46. A

47. A

48. C, D

49. B

50. C

51. D

52. A

53. D

54. C

55. D

56. C

57. A, B

58. A

59. B

60. C

61. F

62. C

63. D

64. A

65. B

66. A

67. A

68. D

69. A, B, D

70. D

71. C

72. B

73. B

74. D

75. A, B

76. C

77. A, C

78. B, D

79. C

80. A

Answers and Explanations

- 1. Answer: C.** If the computer fails to obtain an IP address from a DHCP server, Windows will take over and apply an Automatic Private IP Address (APIPA). This address will be on the 169.254.0.0 network. All of the other addresses could possibly be obtained from a DHCP server. 172.16.10.10 is a Class B private IP address. 192.168.0.10 and 192.168.10.10 are Class C private IP addresses.
- 2. Answer: A.** Case fans are measured in mm (millimeters). 80 mm and especially 120 mm are very common. They are used to exhaust heat out of the case. This aids in keeping the CPU and other devices cool. CPUs commonly use a heat sink/fan combination. However, the two are often connected together. Memory modules don't use fans, but they can be equipped (or purchased) with heat sinks of their own.
- 3. Answer: A.** USB can handle up to 127 devices, though this number is outside the realm of normalcy for most individuals! An IEEE 1394 (FireWire) chain can have up to 63 devices. 24 is the number associated with the ATX 12 V 2.0 (and higher) power connection to a motherboard. It is also one of the amounts of pins you might find on a dot matrix printhead. 255 is a commonly used number when it comes to maximums (for example, the highest number of an octet in an IPv4 address), but it doesn't apply to USB in this case.
- 4. Answer: A.** If you see an exclamation point in the Device Manager, this indicates that the device does not have a proper driver. If the device is disabled, it will have a down arrow. If a driver was not digitally signed, the device might show up in the Unknown Devices category until it is installed properly. If a device has a working driver, then upgrading it will be up to you, but you won't necessarily be notified that the driver needs to be upgraded.
- 5. Answer: C.** As the power-on self-test (POST) checks all the components of the computer, it may present its findings on the screen or in the form of beep codes. The complementary metal-oxide semiconductor (CMOS) stores information such as time and date and BIOS/UEFI passwords. RTC stands for real-time clock; it is the device that keeps time on the motherboard. Windows generates all

kinds of error codes but not beep codes. The beep codes come from the POST, which happens before Windows boots.

6. Answer: B. If the laptop can't display on the LCD or on an external monitor, that tells you that the video card is most likely faulty. The laptop would need to be opened to replace this. In some cases, it is integrated to the motherboard, requiring an entire motherboard replacement. If the inverter fails you would still see a dim display (which can be aided by using a flashlight) and the external monitor should work fine. If the LCD fails, you would not see anything on the display, but the external monitor again would function fine. Incorrect drivers can give a variety of problems, such as unattainable maximum resolutions or a garbled screen. However, the display should show something in that case, and should work fine in Safe Mode, in which new drivers could be installed.

7. Answer: C. The RJ45 jack enables a connection to a twisted-pair (most likely Ethernet) network. Printers with a built-in RJ45 connector are network-ready. So are printers that are Wi-Fi enabled. RJ11 ports are used by modems and dial-up Internet connections. If a printer has this, then it is a multifunction printer acting as a fax machine. USB is the standard port for a printer. This allows it to connect to a PC or to a print server. SCSI connectors are not often found on today's printers; regardless, they would indicate a local connection, not a network connection.

8. Answer: A. The fuser heats paper to around 400° Fahrenheit (204° Celsius). That's like an oven. If you need to replace the fuser, let the printer sit for 10 or 15 minutes after shutting it down, and before maintenance. The fuser is not wet or fragile, and it does not contain toner—that is contained by the cartridge.

9. Answer: A. The Musical Instrument Digital Interface (MIDI) connector is used for musical equipment such as keyboards, synthesizers, and sequencers. MIDI is used to create a clocking signal that all devices can synchronize to. The other three connectors, HDMI, DVI, and DisplayPort, are all video connectors.

10. Answer: B. The Torx screwdriver (also known as a Torx wrench) is a special tool used to remove screws from the outside of a case; often, proprietary computer manufacturers use these screws. It can also be used to remove screws (albeit smaller ones) from a laptop. The standard is the size T-10 Torx screwdriver. But you might also use a T-8 and even a T-6 on laptops.

11. Answer: C. If you want to access more than 4 GB of RAM, you will need a 64-bit operating system. 32-bit OSes are limited to 4 GB of RAM, and in some cases 3.25 GB. Many computers today, especially custom computers such as virtualization systems and gaming computers, require more than 4 GB of RAM so a 64-bit operating system is the only choice. Data Execution Prevention (DEP) is a security feature in today's operating systems; it stops a program from executing code in a forbidden area of memory. Most of today's 32-bit or 64-bit systems offer this. Unsigned drivers are based on the operating system itself; whether that particular OS is 32-bit or 64-bit will not be a factor. You must be an administrator to allow the use of unsigned drivers. 32-bit operating systems can run older 16-bit programs, but 64-bit operating systems will have problems running 16-bit programs even in compatibility mode.

12. Answer: A. Overclocking is the act of increasing your CPU's operating speed beyond its normal rated speed. The rest of the terms are not used in relation to this concept.

13. Answer: C. The service set identifier (SSID) is the most important piece of information required to connect to a wireless network; it is the name of the wireless network. The wireless channel number isn't necessarily needed; the wireless access point (WAP) might auto-negotiate the channel. Also, MAC address filtering is not enabled by default, so the MAC address might not be needed. (In fact, this would be entered by the admin at the wireless access point, not from the client computer.) The administrator password is needed only if you wanted to make configuration changes to the wireless access point. For example, if you wanted to implement MAC filtering, you would have to log in to the WAP with an admin password to configure it.

14. Answer: B. The power management settings on the laptop can cause the display to automatically dim when the AC adapter is unplugged. In fact, this is the default on many laptops in order to conserve battery power. These can be configured within Power Options in Windows. You can certainly set the display to full brightness when on battery power—it just isn't recommended. Laptops can operate properly when connected to the AC power adapter or when using the battery only. The display brightness of a laptop isn't affected by any security settings.

15. Answers: A and E. Advantages of using DHCP include: IP

addresses can be managed from a central location and computers can automatically get new addressing when moved to a different network segment (perhaps one that uses a different DHCP server). Quality of service (QoS) adjusts the network speed based on the type of traffic generated. DHCP has nothing to do with the Hosts.txt file; that file contains static entries of hostname to IP address conversions. Media access control addresses are usually not changed on a network adapter, although they can be masked. MAC filtering maintains a list of MAC addresses that are allowed to access a network, but once again, this is a different concept from DHCP.

16. Answer: A. Hard *disk* drives are magnetic disks. There are optical hard drives, but they are rare; optical disc drives are commonly implemented as CD, DVD, or Blu-ray drives. Impact refers to a type of printer, such as the dot matrix or the daisy wheel printer. Solid-state hard drives do not have a *disk* and therefore have no moving parts, are quiet, and work as fast as (if not faster than) traditional magnetic hard drives. However, they are far more expensive than the magnetic-based hard disk drive.

17. Answer: B. RAM is more essential to the virtualization workstation than any of the other types of custom PCs listed. Virtual operating systems (virtual machines or VMs) require a lot of RAM to run, much more than any other application. Plus, a virtualization workstation will often have more than one virtual machine running, increasing its need for RAM even further. A gaming PCs biggest requirements are the CPU and the video card. Audio/video workstations require specialized audio and video cards, fast hard drives, and dual monitors. Home theater PCs (HTPCs) require an HDMI output, surround sound, a small form factor, and possibly a TV tuner.

18. Answer: D. Paper-feed errors are often caused by the pickup rollers, which are in charge of feeding the paper into the printer. If a separation pad fails, it might cause more than one sheet of paper to be entered into the printer. The developing rollers transfer ink to the imaging drum. The paper tray simply holds the paper. It should not cause paper-feed errors unless the constraining tabs are too tight.

19. Answer: D. Port 443 is the default port for Hypertext Transfer Protocol Secure (HTTPS). This is the protocol used during online banking sessions, or if you go to checkout when shopping online. Port 25 is the default port for Simple Mail Transfer Protocol

(SMTP). Port 80 is Hypertext Transfer Protocol (HTTP). Port 143 is the Internet Message Access Protocol (IMAP); it's similar to Post Office Protocol Version 3 (POP3) but offers offline operation, and multiple clients can access the same mailbox.

20. Answer: B. Class 2 Bluetooth devices have a maximum range of approximately 10 meters. Class 2 devices (such as, for example, Bluetooth headsets) are the most common. Class 1 has a 100-meter range, and Class 3's range is approximately 1 meter. The maximum length of a standard USB 2.0 cable is 5 meters.

21. Answer: A. 802.11a operates at 5 GHz only. 802.11b and g operate at 2.4 GHz. 802.11n operates at either 2.4 or 5 GHz. The IEEE 802.11 wireless standards are collectively known as 802.11x. There is no actual 802.11x standard; it was not used in order to avoid confusion. 802.11x is instead a variable that you will sometimes see that refers to two or more 802.11 technologies. 802.11ac also uses the 5 GHz frequency spectrum.

22. Answer: C. DDR3-1600 has a peak transfer rate of 12,800 MB/s. It runs at an I/O bus clock speed of 800 MHz and can send 1600 megatransfers per second (MT/s). It is also known as PC3-12800. To figure out the data transfer rate of DDR3 from the name "DDR3-1600," simply multiply the 1600 by 8 (bytes) and solve for megabytes: 12,800 MB/s. To figure out the data transfer rate of DDR3 by the consumer name "PC3-12800," just look at the number within the name and add "MB/s" to the end. To figure out the data transfer rate when given only the I/O bus clock speed (for example, 800 MHz), multiply the clock speed by 2 and then multiply that number by 8 and solve for megabytes: $800 \text{ MHz} \times 2 \times 8 = 12,800 \text{ MB/s}$.

DDR3-800 has a peak transfer rate of 6,400 MB/s; it is also known as PC3-6400. There is no DDR2-1600. The fastest DDR2 standard is DDR2-1066, which has a peak transfer rate of 8,533 MB/s. DDR2-800 (like DDR3-800) has a peak transfer rate of 6,400 MB/s. It is commonly sold as PC2-6400.

23. Answer: B. The impact printer uses a print head, ribbon, and tractor feed. An example of an impact printer is the dot matrix. Laser printers are much more complex and use more parts. Inkjet printers use a print head but use an ink cartridge instead of a ribbon and don't use a tractor feed. Thermal printers use a print head and a special heating element.

24. Answer: A. If the CPU is running beyond the recommended voltage range for extended periods of time, it can be a sign of a failing CPU. It could also be caused by overclocking. Check in the BIOS to see if the CPU is overclocked or not. If the computer won't boot at all, another problem might have occurred, or the CPU might have already failed. Low case temperatures are a good thing (if they aren't below freezing!), and spyware is unrelated to this issue.

25. Answer: C. Fiber optic cable is the only answer listed that is not affected by electromagnetic interference (EMI). This is because it does not use copper wire or electricity, but instead uses glass or plastic fibers and light. Any copper cable will be susceptible to EMI to a certain degree. Regular UTP cable such as Cat 5e or Cat 6 will be very susceptible, coaxial slightly less, and shielded twisted-pair (STP) even less than that. STP is difficult to install and must be grounded; because of this, it is found less commonly in networks. To truly protect from EMI, fiber optic is the best way to go. It often requires special tools during installation in order to splice the fibers properly and test the connection effectively.

26. Answer: A. Setting an admin password in the BIOS/UEFI prevents a user from rearranging the boot order. The idea behind this is to stop a person from attempting to boot off of an optical disc or USB flash drive. As an administrator, you should change the BIOS boot order to hard drive first. Then apply an administrative (also known as supervisory) password. That'll stop 'em right in their tracks! The admin password does not prevent any of the other listed answers. To prevent a user from reading email, you would have to remove email applications (such as Outlook) and probably take away the browser, too! (Doesn't sound feasible.) To prevent a virus from infecting the MBR, you could turn on boot sector scanning in the BIOS (if the motherboard supports it). To prevent an attacker from opening the case, use a case lock. To find out if someone attempted to get into the computer itself, turn on the chassis intrusion alert in the BIOS.

27. Answer: D. The external power supply of the laptop converts AC to DC for the system to use and for charging the battery. It is known as the power adapter, and it needs to run at a very specific voltage. In fact, different make and model power adapters will usually not work with different laptops, even if the voltages are only slightly different. The adapter does not store power; that is the responsibility of the laptop battery. It is also accomplished by a UPS, though you

probably wouldn't lug one of those around with your laptop while traveling.

28. Answer: A. High-quality dot matrix printheads can come in 9, 18, or 24 pins, with 24 being the highest quality.

29. Answer: C. LCD contrast ratio is the brightness of the brightest color (measured as white) compared to the darkest color (measured as black). Static contrast ratio measurements are static; this done as a test with a checkerboard pattern. But there is also the dynamic contrast ratio, a newer technology in LCD displays that adjusts dynamically during darker scenes in an attempt to give better black levels. It usually has a higher ratio, but it should be noted that there is no real uniform standard for measuring contrast ratio.

30. Answer: B. Most antistatic straps come with a 1 megaohm resistor, which can protect against surges. However, the best way to avoid a surge is to 1) make sure the computer is unplugged before working on it; and 2) don't touch any components that hold a charge. This means: don't open power supplies or CRT monitors, don't touch capacitors on any circuit boards such as motherboards, and, of course, stay away from any other electrical devices when working on computers.

31. Answer: D. High-Definition Multimedia Interface (HDMI), as the word *multimedia* implies, can transmit video and audio signals.

VGA, RGB, and DVI are video standards only, with DVI being the newest and most commonly used on PC monitors.

32. Answer: D. A router can limit network broadcasts through segmenting and programmed routing of data. This is part of a router's job when connecting two or more networks. It is also used with different media. For example, you might have a LAN that uses twisted-pair cable, but the router connects to the Internet via a fiber-optic connection. That one router will have ports for both types of connections. A switch connects multiple computers together on the LAN; it does not limit IP-based network broadcasts. However, the switch does not segment by IP address—it communicates with computers and segments the network via MAC addresses. Also, the switch will normally use one type of media: twisted pair, connecting to RJ45 ports. However, it is possible that the switch might connect to another switch by way of a specialized fiber-optic connector. A wireless access point (WAP) connects the computers on the wireless LAN (WLAN). It often has only one connection, a single RJ45 port.

A hardware-based firewall usually connects to the network via RJ45; regardless, it will have only one or only a few connections. It doesn't deal with routing, or broadcasts; instead it prevents intrusion to a network.

33. Answer: D. The CPU could overheat if thermal compound has not been applied correctly (which is common) or if it is not seated properly (which is rare). As part of the boot process, power needs to verify the CPU. If the wrong voltage is running to the CPU, the system won't even boot. If an incorrect CPU has been installed, the system will probably not boot, especially if the BIOS doesn't recognize it. Finally, the CPU doesn't use a driver; instead the BIOS recognizes it (or doesn't, if it needs a BIOS update) and passes that information to the operating system.

34. Answer: C. Of the answers listed, 172.17.58.254 is the only valid IPv4 address for a network host. A host on the network is any computer or network device that uses an IP address to communicate with other computers or devices (hosts). 172.17.58.254 is a Class B private IP address so it fits the description of a valid IPv4 address for a network host. 127.0.0.1 is the local loopback address. Every computer using TCP/IP gets this address; it is used for testing. It cannot be used to communicate with other hosts on the network. 169.254.0.0/16 means an IP address of 169.254.0.0 with a default subnet mask of 255.255.0.0, indicating the network number is 169.254. It is not a valid host IP address because it ends in 0.0. The first IP address of a network is always reserved for the network number; it cannot be used by a host. Otherwise, if the address was, say, 169.254.0.1, the address would work, but because it is an APIPA address, it would be able to communicate only with other systems using APIPA addresses. 255.10.15.7 is not valid. That address is within the Class E reserved range. Normal host IP addresses' first octet will either be between 1 and 126, or 128 and 223, but not between 224 and 255.

35. Answer: C. Dynamic random access memory (DRAM) is a module (or stick) of memory that you can install into a motherboard. SDRAM, DDR, DDR2, DDR3, and DDR4 are all examples of DRAM. The complementary metal-oxide semiconductor (CMOS) is a chip that is soldered onto the motherboard that works in conjunction with the Basic Input/Output System, another chip soldered on to the motherboard. Static RAM (SRAM) is memory

that is nonvolatile (as opposed to DRAM); it is also soldered to the circuit board. Read-only memory (ROM) is usually not serviceable. The BIOS resides on a ROM chip, more specifically an electrically erasable programmable ROM (EEPROM) chip.

36. Answer: C. 172.31.1.1 is the only address listed that is private. It is within the Class B range of private addresses: 172.16.1.1–172.31.255.255. 11.58.254.169 is not private because it is on the Class A 11 network. The Class A private range is within the 10.0.0.0 network. 169.255.10.41 is not private either. Microsoft's APIPA, however, uses the 169.254.0.0 network, which is private. 192.169.0.1 is public because of the second octet: 169. The Class C private range is 192.168.0.0–192.168.255.255.

37. Answer: B. The IPv6 loopback address used for testing is ::1. This determines if IPv6 is working correctly on the network card but does not generate network traffic. It exists on every computer that runs IPv6. 127.0.0.1 is the IPv4 loopback address. 192.168.0.0 is simply a private IP network number. FE80::/10 is the range of auto-assigned addresses in IPv6.

38. Answer: C. The only statement that is correct concerning IPv6 is that it uses 128-bit addressing. This is compared to IPv4, which uses 32-bit addresses. IPv6 and IPv4 can cohabit a computer with no problems. IPv6 is not necessarily supported by all routers. Some routers still only support IPv4. IPv6 is a logical concept. The physical cable that connects to the computer has no bearing over which IP version is used.

39. Answer: B. 60° Celsius is a typical operating temperature for CPUs. Keep in mind that the operating range may be above or below that. Many computers hover around 30° to 35° Celsius. On the other hand, 72° Celsius becomes much less typical, even if the user is overclocking the system. 60° Fahrenheit is equal to 15.5° Celsius. A processor will not run that cold (but it would be pretty efficient if it did!). 72° Fahrenheit falls within the range of room temperature and is what you should set the room temperature for computers to run at their best.

40. Answer: A. The impact printer technology is what you want. This strikes the ribbon, and consequently the paper with a printhead. The physical hammering action causes the carbon backing to take effect and apply text to the next layer of paper. Multipart forms such as these are commonly used for receipts. Laser printers can print to

special multipart forms, but not ones with carbon backing. Inkjet and thermal printers are not used with multi-part forms usually.

41. Answers: A and C. A receptacle tester and multimeter can be used (with caution) to test an AC outlet. A power supply (PSU) tester is used to test the main P1 power connection (and possibly other connections) of a power supply. There are various loopback plugs for testing ports on the back of a PC (for example, the RJ45 loopback plug), but these have nothing to do with testing an AC outlet.

42. Answer: D. You cannot install drivers to the BIOS/UEFI. Drivers are software that allow the operating system to communicate with hardware; they can be configured in the Device Manager in Windows. The rest of the answers can be configured in the BIOS. The boot sequence (also known as boot priority or boot order) allows you to select which device will be booted off of first (the hard drive is the most secure). Temperature thresholds allow you to set alerts and possibly shut down the system if the CPU runs too hot. Overclocking is when the CPU's voltage is raised and the speed is increased. Overclocking is not recommended, but if you do configure it, you should set temperature thresholds. Intrusion detection can be enabled and will log if a person opened the computer case.

43. Answer: A. POP3 is the protocol used by email clients to receive email. It makes use of Port 110. SMTP is used by email clients to send email. It uses port 25.

44. Answer: D. To connect one computer to another directly by way of network adapter cards, use a crossover cable (the category such as 5e or 6 doesn't matter). That cable is designed to connect *like* devices. It is wired as T568B on one end and T568A on the other. Those standards are ratified by the Telecommunications Industries Association/Electronic Industries Alliance (TIA/EIA). A regular (and more common) Cat 6 patch cable is known as a straight-through cable. It is used to connect unlike devices, such as a computer to a switch. Normally this is wired with the 568B standard on each end. A parallel cable might be used to connect an older printer to a computer or an external hard drive to a SCSI card. IEEE 1394 cables are not used to connect computers to each other; they are used to connect external hard drives to IEEE 1394 or FireWire ports.

45. Answer: A. Network installations require that the network card be configured for Preboot eXecution Environment (PXE). This allows

the network card to boot off of the network, locate a network installation server, and request that the installation begin. This configuration might be done in the BIOS/UEFI of the computer (if the network adapter is integrated to the motherboard), within a special program in Windows, or one that boots from disc or other removable media (if the network adapter is an adapter card).

Peripheral Component Interconnect (PCI) is an expansion bus that accepts network adapter cards, sound cards, and so on. PCL stands for Printer Command Language, developed by HP so a computer can properly communicate with dot matrix or thermal printers. PnP stands for plug and play, a Windows technology that allows devices to be located and installed automatically.

46. Answer: A. A dual-core processor has two cores, with separate caches, on the same physical chip. A processor with several cores would be known as multi-core (quad-core or hex-core). Dual-core processors are generally more efficient than older single-core processors and often use less voltage. A dual-core processor does not require more RAM than a single-core, but it usually requires more cache memory. Every core of a multi-core CPU has its own L1 and L2 cache.

47. Answer: A. The CPU is the least likely to be replaced. You would probably need to replace other equipment, too, in this case. Just like PCs, though, the CPU should rarely fail. However, you might upgrade, replace, or add to RAM. PC Cards (PCMCIA) are commonly implemented as network adapters, modems, and more. It is common to install and remove PC Cards and their successors: ExpressCards. Laptop keyboards fall victim to coffee, overuse, and other damage over time and sometimes need to be replaced.

48. Answers: C and D. 1000 Mbps is 1000 megabits per second, otherwise notated as 1,000,000,000 bits per second, or 1 gigabit per second.

49. Answer: B. Single-mode fiber optic cable can send data farther than any of the other answers—up to hundreds of kilometers. Multi-mode fiber optic cable can send data about 600 meters. STP is a type of twisted pair; all twisted pair is limited to 100 meters or 328 feet. Coaxial cable is limited to 200 or 500 meters, depending on the type.

50. Answer: C. You should install a USB add-on card. This will give you more ports than the computer already has for use with peripherals. Another option would be to purchase a USB hub.

Modems, network adapters, and TV tuner cards all have their own purpose and do not allow additional peripherals.

51. Answer: D. 7200 RPM is a typical speed of a magnetic hard disk drive—rotational speed, that is. Other common rotational speeds include 5400 RPM; 10,000 RPM; and 15,000 RPM. Note: Solid-state hard drives do not have a magnetic disk, and therefore are not given an RPM rating. 1000 Mbps is a common network data transfer rate. SATA hard drives will commonly have a DTR of 3 Gb/s (300 MB/s) or 6 Gb/s (600 MB/s). 3.1 GHz is a common CPU frequency. 8 GB might be the amount of RAM you install in a computer or the size of a USB flash drive.

52. Answer: A. A switch interconnects devices on the same network so that they can communicate, whereas a router interconnects one or more networks. Remember that the switch is in charge of connecting devices on the LAN. But the router is in charge of connecting the LAN to another LAN, to the Internet, or to both. Multifunction network devices make matters confusing; they combine the functionality of a switch, a router, a wireless access point, and a firewall. Physically, the four-port section of the device is the switch portion and the single port that leads to the Internet is the router portion.

53. Answer: D. In a large corporation (or enterprise environment), tape backup such as Digital Linear Tape (DLT) is the best media for backing up. DLTs and Super DLTs (SDLT) can have a capacity as high as 800 GB, allowing for a huge amount of backup as compared to DVD and dual-layer DVD (4.7–17 GB) and USB flash drives (up to 64 GB or so, though this number will undoubtedly increase as time goes on).

54. Answer: C. The MPEG Audio Layer III (.MP3) works best when dealing with multiple platforms. Advanced Audio Coding (.AAC) is used more commonly on Apple computers and devices and gaming consoles. Windows Media Audio (.WMA) is a Microsoft format developed especially for the Windows Media Player. .MOV is a QuickTime file format meant to be used with movies and other video.

55. Answer: D. Smartphones typically use Secure Digital (SD) cards—more to the point, microSD cards. SSD stands for solid-state drive. This technology is implemented as flash-based hard drives or as adapter cards with DDR memory and a battery. CompactFlash (CF)

cards are a bit bulkier and might be used in conjunction with PCs, laptops, and handheld computers. USB flash drives won't fit inside a typical smartphone and so are relegated to hanging on people's key chains and acting as mobile transporters of data.

- 56. Answer: C.** In this scenario, the organization probably has thin client computers for its users. These have operating systems that are embedded in flash memory, and the rest of the information they require comes from a server. Thin clients normally have no hard drive; this is why they are referred to as *diskless* workstations. Virtualization workstations definitely need a hard drive and require lots of other resources; they are not as dependent on servers. Client/server is a type of networking organizational technique. However, thin clients will often log in to a server. Thick clients are for the most part PCs, the typical desktop computer.

- 57. Answers: A and B.** Know the main steps of the laser printer imaging process: processing, charging, exposing, developing, transferring, fusing, and cleaning. In the charging step, the drum is conditioned/charged by the primary corona wire (negatively charging it) and is prepared for writing. In the transferring step, the paper is positively charged by the transfer corona wire, preparing it to accept the toner from the drum.

- 58. Answer: A.** Power surges can cause the inverter to short out, after which the cold-cathode fluorescent lamps (CCFL) cannot get any power. You need to open the LCD panel to replace the inverter, in this case.

- 59. Answer: B.** When testing the main 24-pin ATX power connector that leads from the power supply to the motherboard, use a multimeter. It can test each individual wire's voltage. Better yet, use a power supply unit (PSU) tester. This tests them all in one shot. A Torx screwdriver is used to open computers and laptops that have special Torx screws; T-10 is a common size. A receptacle tester is used to test an AC outlet, although multimeters can be used for that as well. A tone and probe kit is used to test telephone and network connections for continuity. However, it can test only one pair of the wires in the cable. For better results when testing network cables, use a proper network cable testing kit. Testing tools are a key ingredient in a computer technician's toolkit.

- 60. Answer: C.** The Service Location Protocol (SLP) uses port 427. It enables access to network services without previous configuration of

the client computer. FTP uses port 21 by default. DNS uses port 53. HTTPS uses port 443. RDP uses port 3389.

61. Answer: F. The Apple Filing Protocol (AFP) uses port 548. AFP offers file services for Mac computers running OS X and can transfer files across the network. Port 22 is used by SSH. Port 23 is used by Telnet. Port 80 is used by HTTP. Port 143 is used by IMAP. Port 445 is used by SMB.

62. Answer: C. Tablets and other mobile devices often use Advanced RISC Machine (ARM) CPUs. These are designed for simplicity and low-power usage compared to desktop computer CPUs such as the Intel Core i7 and AMD Phenom II, Athlon II, and FX CPUs. FM2 is a socket type used by AMD CPUs.

63. Answer: D. The micro-B USB port is a common charging/data port for Android devices. Some manufacturers modify the design to create a proprietary micro-B USB port. Mobile devices do not use the standard size USB ports that desktop computers do, and it is uncommon for them to use mini-USB ports.

64. Answer: A. Tablets do not have a touchpad; instead you use your finger(s) or a stylus to tap on the display (known as a *touchscreen*). Tablets have displays and wireless network adapters. They also have an onscreen keyboard. The question did not specify physical or virtual keyboard. Be ready for vagaries such as those on the real exam.

65. Answer: B. When troubleshooting a computer system, always look for the most likely and simplest solutions first. The fact that the user might not have turned her monitor on when she first came in is a likely scenario. Afterward, you could check whether the computer is on, if the computer and monitor are plugged into the AC outlet, and whether the monitor is plugged into the computer. Reinstalling the video driver is much further down the list.

66. Answer: A. Chances are that the computer has faulty memory or a memory module that needs to be reseated properly. The flashing cursor on the screen tells you that the system is not posting properly. The numbers counting up are the system checking the RAM. If the system beeps and freezes during this count-up, then the RAM has an issue. It could also be incompatible with the motherboard. A corrupt MBR would either give a message stating “missing OS” or “the MBR is corrupt.” If the OS was corrupted, you would get a message to that effect. If the computer attempts to boot off of the network,

you will see gray text and a spinning pipe sign as it attempts to find a DHCP server.

67. Answer: A. If you get any address that starts with 169.254, it means the computer has self-assigned that address. It is known as an APIPA address (Automatic Private IP Addressing). Normally, DHCP servers will not use this network number. A simple `ipconfig /release` and `ipconfig /renew` might fix the problem, if a DHCP server is actually available. The POP3 server is for incoming mail, the DNS server is for resolving domain names to IP addresses, and the WINS server is for resolving NetBIOS names to IP addresses.

68. Answer: D. Ghosted images or blurry marks could be a sign that the drum has some kind of imperfection or is dirty, especially if the image reappears at equal intervals. Replace the drum (or toner cartridge). Another possibility is that the fuser assembly has been damaged and needs to be replaced.

69. Answers: A, B, and D. Always make sure that the speaker power (if any) is plugged into an AC outlet and that the speakers are on (if they have a power button). When a sound card is first installed, Windows should recognize it and either install a driver through plug and play or by asking for a driver CD. For best results, use the manufacturer's driver, the latest of which can be found on its website. Make sure that you plug the speakers into the correct 1/8" jack. The speaker out is the one with concentric circles and an arrow pointing out. Or you might have 5.1 (or 7.1) surround sound; in which case, you would use the standard front speaker jack, which is often a green jack. Finally, it's quite hard to plug a sound card into a wrong slot. For example, if you have a PCI Express (PCIe) x1 sound card (a common standard), you can then plug that sound card into any of the available PCIe slots on your motherboard and it will be recognized. (Word to the wise, if you ever remove the sound card when upgrading, make sure you put it back in the same slot.) PCIe cards will not fit in the older PCI slot.

70. Answer: D. The wireless hardware switch (or button) is turned off. Always check that Wi-Fi switch. If it is enabled, then make sure that the wireless adapter is enabled in Windows. Check if the laptop is within range of the wireless access point. The drivers and the firmware should not be an issue because the laptop was able to connect yesterday. However, you never know what might have happened, so check those later on in your troubleshooting process.

71. Answer: C. The purpose of a DNS server is to resolve (convert) hostnames and domain names to the IP address. Computers normally communicate via IP address, but it is easier for humans to type in names. If Davidlprowse.com is down, you cannot ping the corresponding IP address at all. As to the incorrect answers: If the DHCP server is down, your workstation will probably not have an IP on the network and again will not ping the corresponding IP address. AD DS is Active Directory Domain Services, meaning a domain controller, which doesn't have much to do with this, except that in many smaller companies, the domain controller and DNS server are one and the same.

72. Answer: B. You must have the correct firmware to recognize the latest CPUs. If the CPU is not seated properly or if you have an incorrect CPU, the system simply won't boot. Windows does not affect the POST at all. In some cases, you might purchase a motherboard that says it can support a specific new processor. However, the firmware might not have been written yet to actually work with that processor!

73. Answer: B. `Ipconfig/all` shows a lot of information, including the MAC address. Plain old `ipconfig` shows only the IP address, subnet mask, and gateway address. Ping tests whether other computers are alive on the network. `Ipconfig/release` is used to troubleshoot DHCP-obtained IP addresses. It is often used in conjunction with `ipconfig/renew`.

74. Answer: D. First try printing an internal test page, meaning from the printer's onscreen display. If that doesn't work, you need to start troubleshooting the printer; perhaps the toner cartridge is empty, or maybe a corona wire is malfunctioning. If the test page prints fine, you can check the printer drivers and other settings at the computer that uses the printer. Restarting the spooler should not help in this situation. If the spooler stalled, then no paper should come out of the printer. Likewise, the printer cable should not have to be replaced.

75. Answers: A and B. The easiest and (probably) cheapest way is to move the WAP. Basements are usually the worst place for an access point because of concrete foundations and walls, electrical interference, and so on. Signal boosters might also work, but often the cost of a signal booster is the same as buying a newer, more powerful WAP! Unfortunately, new drivers and firmware usually do not help the situation. It's possible that a new driver can make better

use of the wireless network adapter hardware, but it won't necessarily offer a better connection. It's a good idea in any event, but it's not one of the best answers listed.

76. Answer: C. The simplest solution is often the most common. Check cables and see whether the power is on for your devices and computers. Afterward, you can check the driver within the Device Manager, and check the firewall settings as well. Whether or not the drive is fragmented should not affect the Internet connection.

77. Answers: A and C. It is common to have an unseated RAM stick or video card. These are the most common culprits of beep codes during the POST. If the CPU is not installed properly, you might not even get any beep codes at all. And the CD-ROM's functionality has little bearing on the POST.

78. Answers: B and D. Two examples of virtual printing include XPS printing and print to file (one example of which saves the file as a .prn). Other examples include printing to PDF and printing to image. "Start printing after the last page is spooled" is a spooling setting used to lessen the load on physical or virtual printers, but is a technology that printers use, not a type of virtual printing. Printing to a printer pool is another type of printer configuration used to print to a group of printers, making use of the collective whole for efficiency; but again, these could be physical or virtual printers and it is not a type of virtual printing in of itself.

79. Answer: C. Use the USB connector. By far, this is the easiest method. Windows will sense the USB connection and attempt to install the print driver automatically (though you should still install the latest proper driver from the printer manufacturer's website). Yes, the printer has an Ethernet connection as well (that is the network connection), but using it will require you to connect it to the network. What if there is no network? And even if there is, the printer would have to be configured for the network, and then the laptop would have to connect to the printer over the network. If the laptop is the only system that will use the printer, USB becomes much easier. Thunderbolt often uses the mini DisplayPort for the transmission of data or video, especially on Apple-based computers (though not limited to those). Though Thunderbolt can be used for printing, the scenario doesn't state that the laptop has a Thunderbolt port.

80. Answer: A. Excessive heat is the most likely cause of the problem.

This could be an unfortunate result of ovens and other equipment. Computers in environments such as these are often prone to dirt collecting inside the CPU fans and other devices inside the case. Faulty RAM wouldn't cause hard drives to fail or un-seat expansion cards. The cards probably moved around due to thermal expansion and contraction. 240 V outlets are most likely going to be found in this environment, but the computer shouldn't use those; in the United States, the computer should be connected to a 120 V outlet. The computer should be changed to 240 V only if it is brought to another country—for example, a country in Europe. Power brownouts could cause failures of the power supply, and maybe even the hard drive, but they would not cause the adapter cards to be unseated.

Chapter Four. 220-901 Practice Exam C

This time, let's turn up the gas a little further. I'll be increasing the level of difficulty once more. This third 220-901 exam could be considered an advanced practice exam. Be ready for more scenario-oriented and troubleshooting-based questions.

If you didn't already, I suggest taking a break between exams. If you did not score 90 percent or higher on the first two 220-901 practice exams, do not take this one yet. Go back and study, and then retake those exams until you pass with 90 percent or higher. Then come back to this exam.

Write down your answers and check them against the Quick-Check Answer Key that immediately follows the exam. After the answer key you will find the explanations for all of the answers. Good luck!

Practice Questions

1. Your coworker Patrick has a Core i5 3.1 GHz CPU and wants you to tell him what the bus speed is and what the maximum multiplier is. What do you tell him?

- A. 3.1 GHz and 31
- B. 3.1 GHz and 100
- C. 100 and 31
- D. 200 and 31

Quick Answer: [92](#)

Detailed Answer: [93](#)

2. A user complains that his network interface card (NIC) is not functioning and has no link lights. The weather has been changing drastically over the past few days, and humidity and temperature have been rising and falling every day. Which of the following could be the direct cause of this problem? (Select the best answer.)

- A. Thermal expansion and contraction
- B. Thermal sublimation
- C. Chip creep
- D. POST errors

Quick Answer: [92](#)

Detailed Answer: [93](#)

3. A user reports that the battery in his Windows laptop is often low on power. Which of the following should you recommend to help the user conserve laptop battery power?

- A.** Configure the laptop power options to restore power usage when the laptop is unattended.
- B.** Configure the laptop power options to the power saver plan.
- C.** Have the user remove the battery and run the laptop using the electrical cord only.
- D.** Have the user run the laptop using the battery until all the power is depleted and then recharge the battery.

Quick Answer: [92](#)

Detailed Answer: [93](#)

4. Which of the following is indicated by repetitive flashing lights on the keyboard during POST?

- A.** A software error
- B.** A hardware error
- C.** A password is required
- D.** An external peripheral error

Quick Answer: [92](#)

Detailed Answer: [93](#)

5. Which network type enables high-speed data communication and is the most difficult to eavesdrop on?

- A.** Satellite
- B.** DSL
- C.** Fiber optic
- D.** Cable

Quick Answer: [92](#)

Detailed Answer: [94](#)

6. Which of the following is a difference between a cellular WAN card and a WLAN card?

- A.** A cellular WAN card requires a subscription to a cellular provider, whereas a WLAN card can work without provider payment.

- B.** A cellular WAN card works on most public wireless access points, whereas a WLAN card is more proprietary.
- C.** A WLAN card generally has a range of 6 miles, whereas a cellular WAN card is limited in range to 1,200 feet.
- D.** A WLAN card is usually an external card, whereas a cellular WAN card is usually an internal card.

Quick Answer: [92](#)

Detailed Answer: [94](#)

7. Which of the following defines the protocols associated with the following TCP or UDP port numbers, in order?

21, 22, 25, 53, 443, 3389.

- A.** FTP, Telnet, SMTP, DNS, HTTP, RDP
- B.** FTP, SSH, SMTP, DNS, HTTP, RDP
- C.** FTP, SSH, SMTP, POP3, HTTPS, RDP
- D.** FTP, SSH, SMTP, DNS, HTTPS, RDP

Quick Answer: [92](#)

Detailed Answer: [94](#)

8. You are tasked with installing a new SATA revision 3.0 hard drive controller so that the computer can access hard drives at 6 Gb/s. Which step list will most likely prevent errors?

- A.**
 1. Install the card.
 2. Update the BIOS.
 3. Upgrade the card's firmware.
 4. Install the driver.
 5. Apply system updates.

- B.**
 1. Apply system updates.
 2. Update the BIOS.
 3. Install the card.
 4. Install the driver.
 5. Upgrade the card's firmware.

- C.**

- 1.** Update the BIOS.
- 2.** Install the driver.
- 3.** Install the card.
- 4.** Upgrade the firmware.
- 5.** Apply system updates.

D.

- 1.** Apply system updates.
- 2.** Install the driver.
- 3.** Install the card.
- 4.** Upgrade the firmware.
- 5.** Update the BIOS.

Quick Answer: [92](#)

Detailed Answer: [94](#)

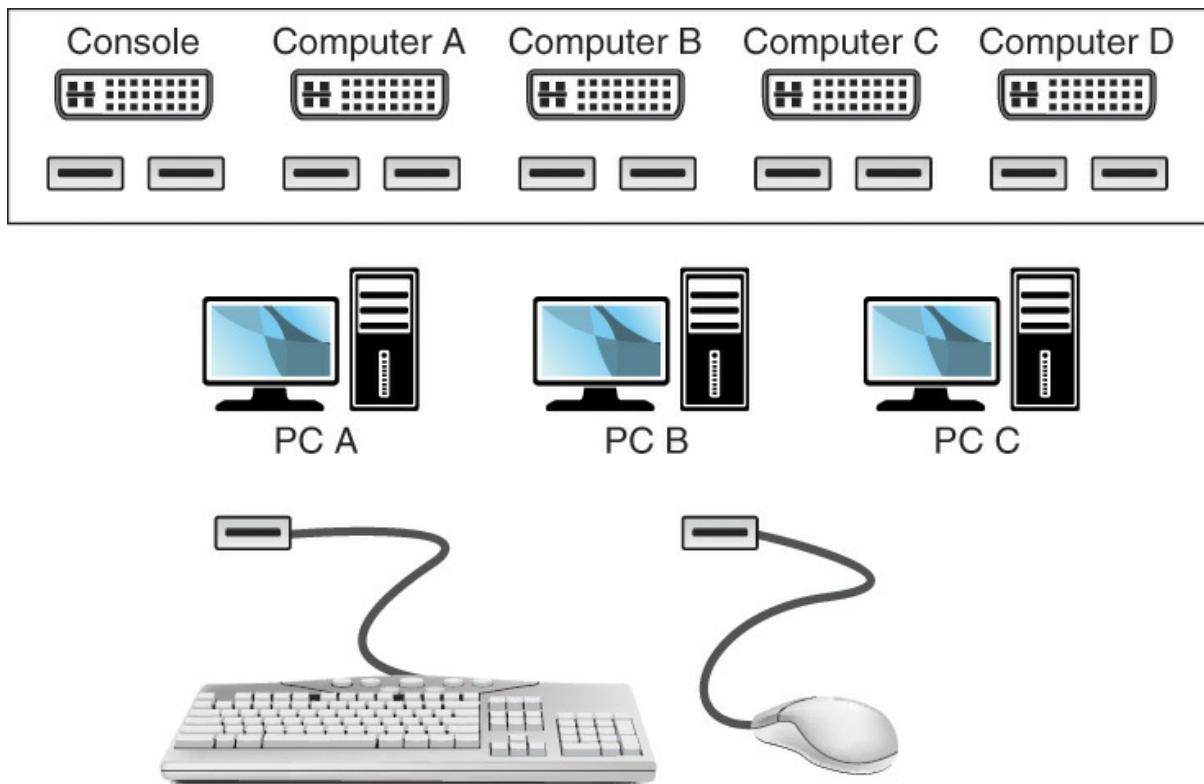
- 9.** A new video card you are installing requires a 600 W power supply. The power supply should have how many pins on the main cable?

A. 6 pins
 B. 8 pins
 C. 20 pins
 D. 24 pins
 E. 40 pins

Quick Answer: [92](#)

Detailed Answer: [94](#)

- 10.** Examine the following illustration. Then answer the question that follows.



Which of the following is the minimum number of USB cables required to set up the three computers, including the keyboard and mouse?

- A. 2
- B. 6
- C. 8
- D. 10

Quick Answer: [92](#)

Detailed Answer: [95](#)

11. Which of the following data rates are supported by PC3-10600 memory?

- A. 1333 MT/s and 1066 MT/s
- B. 1066 MT/s and 800 MT/s
- C. 1600 MT/s and 1333 MT/s
- D. 1600 MT/s and 800 MT/s

Quick Answer: [92](#)

Detailed Answer: [95](#)

12. Which of the following properties of a heat sink has the greatest effect on heat dissipation?

- A. Connection type
- B. Shape
- C. Surface area
- D. Proximity to the power supply

Quick Answer: [92](#)

Detailed Answer: [95](#)

- 13.** A PC has the memory configuration listed below. Assuming RAM is the same price per MB, which of the following answers would be the least expensive when upgrading the PC to 12 GB of RAM?

Memory slots: 2

DRAM frequency: 667 MHz

Slot 1

Capacity: 4096 MB

Memory type: DDR3 (PC3-10600)

Speed: 667 MHz (DDR3-1333)

Slot 2

Capacity: 2048 MB

Memory type: DDR3 (PC3-10600)

Speed: 667 MHz (DDR3-1333)

- A. A single 6 GB DDR3 PC3-12800 memory module
- B. A single 8 GB DDR3 PC3-12800 memory module
- C. A single 10 GB DDR3 PC3-10600 memory module
- D. Two 6 GB DDR3 PC3-10700 memory modules

Quick Answer: [92](#)

Detailed Answer: [95](#)

- 14.** Which of the following multimeter settings should be used only when there is no electrical flow through the part being tested? (Select the two best answers.)

- A. Continuity
- B. Wattage
- C. Voltage

- D. Amps
- E. Resistance

Quick Answer: [92](#)

Detailed Answer: [95](#)

15. You need to set up a server system that will run in a VM. It will have the bulk of the network computers' resources and will supply much of the resources necessary to the client computers that will connect to it. You are also required to set up the client computers. Which two types of systems (server and client) will you be implementing?

- A. CAD/CAM workstation and PCs
- B. Virtualization workstation and thin clients
- C. Home server PC and thick clients
- D. AV workstation and laptops

Quick Answer: [92](#)

Detailed Answer: [96](#)

16. Your boss can receive email but can't seem to send email with the installed email client software. Which protocol is not configured properly?

- A. SMTP
- B. POP3
- C. FTP
- D. HTTP

Quick Answer: [92](#)

Detailed Answer: [96](#)

17. A customer's laptop LCD needs replacement. Which of the following tools should be used to open the case?

- A. Pliers
- B. Plastic tweezers
- C. Flathead screwdriver
- D. Plastic shim

Quick Answer: [92](#)

Detailed Answer: [96](#)

18. When a PC is first booted, which of the following tests the processor, RAM, video card, hard drive controllers, drives, and keyboard?

- A. CMOS chip
- B. BIOS setup
- C. POST
- D. Bootstrap loader

Quick Answer: [92](#)

Detailed Answer: [96](#)

19. A laser printer's primary corona wire does which of the following?

- A. Puts a uniform negative charge on the drum
- B. Puts a uniform positive charge on the drum
- C. Puts the toner on the drum
- D. Removes static electricity

Quick Answer: [92](#)

Detailed Answer: [96](#)

20. Which device on the motherboard retains variable information such as the time and date?

- A. BIOS
- B. CMOS
- C. CR2032
- D. Setup

Quick Answer: [92](#)

Detailed Answer: [96](#)

21. Which of the following can be used to verify settings between the computer and a connected modem?

- A. AT&V
- B. IRQ
- C. MBR
- D. QPI

Quick Answer: [92](#)

Detailed Answer: [96](#)

22. Tim wants to use a wireless mouse with short-range

communications. Which of the following is the best solution?

- A. Cellular
- B. Bluetooth
- C. USB
- D. Ethernet

Quick Answer: [92](#)

Detailed Answer: [97](#)

23. Which tool is used to test all computer hardware prior to installing an operating system?

- A. Another computer system
- B. BIOS setting
- C. Windows
- D. POST card

Quick Answer: [92](#)

Detailed Answer: [97](#)

24. Which tool should be used to test the voltage of a power supply?
(Select the two best answers.)

- A. Multimeter
- B. Loopback plug
- C. Cable tester
- D. Antistatic mat
- E. PSU tester

Quick Answer: [92](#)

Detailed Answer: [97](#)

25. One of your customers is running Windows 7 on a PC that has a 2 GHz CPU, 2 GB RAM, and a 64 MB video card. The customer tells you that performance is slow when Aero is enabled. Which of the following solutions increases performance on the computer?

- A. Increasing system RAM
- B. Upgrading the video card
- C. Increasing the hard drive capacity
- D. Upgrading the CPU

Quick Answer: [92](#)

Detailed Answer: [97](#)

26. Which of the following sockets replaces the Intel 1156 socket?
(Select the two best answers.)

- A. 775
- B. 940
- C. 1155
- D. 1366
- E. 1150

Quick Answer: [92](#)

Detailed Answer: [97](#)

27. Which of the following is the data transfer rate of DMI version 2.0?

- A. 1000 Mbps
- B. 20 Gb/s
- C. 3.0 Gb/s
- D. 5 Gb/s

Quick Answer: [92](#)

Detailed Answer: [97](#)

28. You are building an HTPC. Which form factor and video output should you select?

- A. ATX and DVI
- B. Mobile-ITX and HDMI
- C. Pico-ITX and RG-6
- D. microATX and HDMI

Quick Answer: [92](#)

Detailed Answer: [97](#)

29. Which of the following is configured in the BIOS/UEFI? (Select the four best answers.)

- A. Time and date
- B. The registry
- C. Boot sequence
- D. Passwords
- E. USB drivers

F. WOL

Quick Answer: [92](#)

Detailed Answer: [97](#)

30. You have purchased a motherboard for your new audio workstation. You have opened the computer case and are ready to install. What are the first and last things you should do? (Select the two best answers.)

- A. Select a motherboard
- B. Install the CPU
- C. Test the motherboard
- D. Put on an antistatic strap
- E. Connect the main power cable

Quick Answer: [92](#)

Detailed Answer: [98](#)

31. You want to test whether IPv4 *and* IPv6 are working properly on a computer. Which of the following commands should be issued?

- A. ipconfig ::1 and ping ::1
- B. ping 127.0.0.0 and ping :1
- C. ping 127.0.0.1 and ping ::1
- D. ipconfig 127.0.0.1 and ping 127::1

Quick Answer: [92](#)

Detailed Answer: [98](#)

32. Which of the following measurements is the typical latency of a SATA hard drive?

- A. 300 MB/s
- B. 7200 RPM
- C. 16 MB
- D. 4.2 ms

Quick Answer: [92](#)

Detailed Answer: [98](#)

33. The marketing printer has been used for four years. Which of the following statements represents a best practice for ensuring the printer remains in good working order?

- A. You should clean the printer.
- B. You should install a maintenance kit.
- C. You should clear the counter.
- D. You should print a test page.

Quick Answer: [92](#)

Detailed Answer: [98](#)

34. The drum of a laser printer should never be exposed to which of the following?

- A. Airflow
- B. Cold temperature
- C. A strong light source
- D. Toner dust

Quick Answer: [92](#)

Detailed Answer: [98](#)

35. Which of the following tools should be used to determine why a computer fails to boot?

- A. Cable tester
- B. Loopback plug
- C. PSU tester
- D. Tone and probe kit

Quick Answer: [92](#)

Detailed Answer: [98](#)

36. Which type of cache memory is shared by all cores of a CPU?

- A. L1
- B. L2
- C. L3
- D. DRAM

Quick Answer: [92](#)

Detailed Answer: [98](#)

37. Which technology calculates two independent sets of instructions simultaneously, simulating two CPUs?

- A. Hyper-threading

- B.** HyperTransport
- C.** Turbo Boost
- D.** Multi-core

Quick Answer: [92](#)

Detailed Answer: [98](#)

38. Which of the following is used to measure TDP?

- A.** Volts
- B.** Watts
- C.** Ohms
- D.** Amps

Quick Answer: [92](#)

Detailed Answer: [99](#)

39. You are tasked with plugging a network patch cable into an inactive drop within a user's cubicle. Which of the following tools enables you to find the correct network drop in the wiring closet so that you can make the port hot?

- A.** PSU tester
- B.** Multimeter
- C.** Cable tester
- D.** Tone and probe kit

Quick Answer: [92](#)

Detailed Answer: [99](#)

40. You think that the power supply in your PC might be failing, causing issues with a SATA drive. You decide to test the SATA drive. Which of the following are the standard voltages of a SATA connection on an ATX power supply?

- A.** 3.3 V, 5 V, 12 V
- B.** -3.3 V, 5 V, -12 V
- C.** -5 V, 5 V, 12 V
- D.** 5 V and 12 V

Quick Answer: [92](#)

Detailed Answer: [99](#)

41. You just installed a maintenance kit to a laser printer. Which of the

following steps should be taken next?

- A. You should restore the printer to factory settings.
- B. You should print a test page.
- C. You should refill the paper trays.
- D. You should restart the printer.

Quick Answer: [92](#)

Detailed Answer: [99](#)

42. Which type of external connection allows for the fastest hard drive data rate?

- A. USB 2.0
- B. eSATA
- C. IEEE 1394a
- D. 1000BASE-T

Quick Answer: [92](#)

Detailed Answer: [99](#)

43. Which of the following represents the best solution for making a direct wireless connection between a laptop and a printer?

- A. FireWire
- B. IEEE 1284
- C. Bluetooth
- D. IEEE 1394

Quick Answer: [92](#)

Detailed Answer: [99](#)

44. Which of the following is defined as the movement of electric charge?

- A. Voltage
- B. Wattage
- C. Amperage
- D. Impedance

Quick Answer: [92](#)

Detailed Answer: [99](#)

45. Which of the following are the standard voltages in the United States for a home and for the internal workings of a PC?

- A. 240 V AC, 12 V DC
- B. 120 V AC, 240 V DC
- C. 240 V AC, 5 V DC
- D. 120 V AC, 12 V DC

Quick Answer: [92](#)

Detailed Answer: [100](#)

46. Which of the following should be used to clean a laser printer's rubber rollers?

- A. Soap and water
- B. WD-40
- C. Isopropyl alcohol
- D. A moist cloth

Quick Answer: [92](#)

Detailed Answer: [100](#)

47. An administrator cannot connect to a network volume. Which of the following is the best path for the administrator to use?

- A. \\computername\C\$
- B. \\ipaddress\sharename
- C. //computername/C\$
- D. http://computername/C
- E. \\computername\sharename

Quick Answer: [92](#)

Detailed Answer: [100](#)

48. A coworker at a satellite office reports that a new replacement shared workgroup printer has arrived. It is the same model as the old one. Your coworker replaced the old printer and connected all the cables to the new printer. Which of the following is the easiest way to ensure that all the client computers can connect to the new printer via IPP?

- A. Name the new printer with the old printer name
- B. Allow the printer to acquire a DHCP address
- C. In DHCP, set a reservation by MAC address
- D. Have your coworker print the configuration page

Quick Answer: [92](#)

Detailed Answer: [100](#)

49. A user cannot connect to a printer with the following UNC path: \\10.10.1.5\printer1. Which of the following paths is the best solution?

- A.** ipp://10.10.1.5/printer1
- B.** https://10.1.1.5/printer1
- C.** //10.10.1.5/printer1
- D.** http:\\10.10.1.5\printer1

Quick Answer: [92](#)

Detailed Answer: [100](#)

50. Which of the following communications protocols is used to connect to websites over secure communications links?

- A.** SSH
- B.** SFTP
- C.** HTTPS
- D.** Kerberos

Quick Answer: [92](#)

Detailed Answer: [100](#)

51. Which of the following protocols can be used to configure and monitor network printer device status?

- A.** SMTP
- B.** SNMP
- C.** TCP/IP
- D.** IPP
- E.** DNS

Quick Answer: [92](#)

Detailed Answer: [101](#)

52. Jake, your coworker, is planning on using an extension magnet to pick up a screw that dropped inside a computer case. What should you recommend he do before attempting this?

- A.** Make sure the extension magnet is rubber coated
- B.** Back up the computer to prevent any potential loss of data

- C. Turn on the computer to prevent shorts
- D. Unplug the power cord to prevent shorts

Quick Answer: [92](#)

Detailed Answer: [101](#)

53. Which of the following are descriptions or examples of unicast IPv6 addresses? (Select the two best answers.)

- A. An address assigned to a group of interfaces where the packets are delivered to all interfaces
- B. An address assigned to one interface
- C. An address assigned to a group of interfaces where the packets are delivered to the first interface only
- D. A loopback address of ::1

Quick Answer: [92](#)

Detailed Answer: [101](#)

54. Which of the following symptoms would indicate to you that there is a power supply issue?

- A. The CPU is overclocking.
- B. The Wi-Fi range is reduced.
- C. Frequent failure of hard drives.
- D. Your CD burner takes longer to write than usual.

Quick Answer: [92](#)

Detailed Answer: [101](#)

55. Which of the following custom PC configurations require powerful CPUs? (Select the three best answers.)

- A. CAD/CAM workstation
- B. Audio/video editing workstation
- C. Virtualization workstation
- D. Gaming PC
- E. Home theater PC
- F. Home server PC

Quick Answer: [92](#)

Detailed Answer: [101](#)

56. You need to install a device that can read groupings of parallel lines.

Which of the following devices should be selected?

- A. Biometric scanner
- B. Image scanner
- C. Barcode reader
- D. Touchpad

Quick Answer: [92](#)

Detailed Answer: [102](#)

57. You are building a new PC and want to select a motherboard that supports the Scalable Link Interface (SLI) technology so you can install two SLI video cards connected by a bridge. Which of the following expansion slots should the motherboard have for your two video cards?

- A. Two PCIe version 2 slots
- B. Two PCIe version 3 slots
- C. A PCI and PCIe slot
- D. A USB port and PCIe slot

Quick Answer: [92](#)

Detailed Answer: [102](#)

58. You are building a new PC for a customer. Which of the following is the most valid reason why you would select SATA 3.0 over the original SATA 2.0?

- A. You are installing an external SATA drive.
- B. You are attempting to implement hot-swapping functionality.
- C. You are trying to optimize the system for audio and video.
- D. You do not want to use jumpers.

Quick Answer: [92](#)

Detailed Answer: [102](#)

59. Which of the following is the *best* tool to use to reach a screw that has fallen into a computer case and out of reach?

- A. Pliers
- B. Wrist strap
- C. Tweezers
- D. Extension magnet

Quick Answer: [92](#)

Detailed Answer: [102](#)

60. You need to replace RAM in a PC that currently uses PC3-10600 memory. Unfortunately, you do not have any RAM meeting that exact specification. Which RAM should you install?

- A. PC3-6400
- B. PC3-8500
- C. PC3-12800
- D. DDR3-1066

Quick Answer: [92](#)

Detailed Answer: [102](#)

61. Which of the following RAID arrays is fault-tolerant and allows you to do striping with parity?

- A. RAID 0
- B. RAID 1
- C. RAID 5
- D. RAID 10

Quick Answer: [92](#)

Detailed Answer: [102](#)

62. Which of the following are two possible reasons that an optical mouse cursor erratically jumps around the screen? (Select the two best answers.)

- A. It is using an incorrect mouse driver.
- B. The mouse trackball needs to be removed and cleaned.
- C. There's a conflict with the keyboard.
- D. It is on an uneven surface.
- E. The mouse needs to be charged.

Quick Answer: [92](#)

Detailed Answer: [103](#)

63. When you are dealing with a power issue, which of the following should be checked first?

- A. Input devices
- B. Network cabling

- C. Wall outlet
- D. Power supply

Quick Answer: [92](#)

Detailed Answer: [103](#)

64. When a computer receives the IP address 169.254.127.1, which of the following has failed?

- A. DHCP
- B. DNS
- C. WINS
- D. APIPA

Quick Answer: [92](#)

Detailed Answer: [103](#)

65. Emergency! Your boss forgot the password to the BIOS/UEFI on a computer. Which of the following methods helps you to reset the password?

- A. Removing the RAM from the motherboard
- B. Removing the CMOS battery from the motherboard
- C. Removing the RAM jumper from the motherboard
- D. Removing the main power connection from the motherboard

Quick Answer: [92](#)

Detailed Answer: [104](#)

66. In a RAID 5 array of eight hard drives, how many can fail without losing the entire array?

- A. Zero
- B. One
- C. Two
- D. Five

Quick Answer: [92](#)

Detailed Answer: [104](#)

67. Which of the following steps should be taken before shipping a user's laptop to the manufacturer for repair?

- A. You should remove the LCD.
- B. You should clean it thoroughly.

- C. You should remove the hard drive.
- D. You should remove the WLAN card.

Quick Answer: [92](#)

Detailed Answer: [104](#)

68. Which of the following are the Intel and AMD names for CPU virtualization? (Select the two best answers.)

- A. VT-x
- B. AMD-Vi
- C. VT-d
- D. AMD-V

Quick Answer: [92](#)

Detailed Answer: [104](#)

69. At 12x speed, how much data can a Blu-ray drive read per second?

- A. 50 GB
- B. 432 Mb/s
- C. 4.5 MB/s
- D. 150 KB/s

Quick Answer: [92](#)

Detailed Answer: [104](#)

70. Which of the following video connectors accepts digital and analog video signals only?

- A. DVI-D
- B. DVI-A
- C. DVI-I
- D. HDMI Type B

Quick Answer: [92](#)

Detailed Answer: [104](#)

71. Which of the following can be described as a mobile device sharing its Internet connection with other Wi-Fi capable devices?

- A. USB tethering
- B. Wi-Fi sharing
- C. Internet pass-through

D. Wi-Fi tethering

Quick Answer: [92](#)

Detailed Answer: [104](#)

72. A user with a laptop frequently goes into the office to work. However, the laptop has only two USB ports and the user is unable to connect the keyboard, mouse, monitor, and scanner at the same time. Which of the following solutions would resolve this problem?

- A. A KVM switch
- B. An IEEE 1394 connection
- C. A docking station
- D. A Bluetooth adapter

Quick Answer: [92](#)

Detailed Answer: [104](#)

73. Which of the following steps should be taken first when a printer fails to print very large documents but still prints smaller documents without a problem?

- A. Check if the correct type of paper is being used.
- B. Replace the communications cable.
- C. Change the toner cartridges.
- D. Add memory to the printer.

Quick Answer: [92](#)

Detailed Answer: [105](#)

74. You print an image to your printer, but the page shows a ghosted image. Which of the following could be the cause?

- A. The drum needs replacing.
- B. The printer is offline.
- C. There's an incorrect driver.
- D. There's a dirty primary corona wire.

Quick Answer: [92](#)

Detailed Answer: [105](#)

75. A coworker notices that the battery light on a laptop is flashing when the laptop is in a docking station. Which of the following steps should be performed first to fix the problem?

- A. Replace the laptop battery.
- B. Reinstall the operating system.
- C. Reseat in the docking station.
- D. Remove and reseat the battery.

Quick Answer: [92](#)

Detailed Answer: [105](#)

76. A tablet device is having trouble accessing the wireless network. Which of the following steps should be taken to troubleshoot the problem? (Select the three best answers.)

- A. Power cycle the device.
- B. Use GPRS instead.
- C. Check if the SSID was correct.
- D. Set up a static IP.
- E. Forget the network and reconnect to it.

Quick Answer: [92](#)

Detailed Answer: [105](#)

77. Which of the following steps should be taken to connect a Bluetooth headset to a smartphone? (Select the two best answers.)

- A. Pair the device to the phone.
- B. Install Bluetooth drivers.
- C. Enter a passcode.
- D. Disable Wi-Fi.

Quick Answer: [92](#)

Detailed Answer: [105](#)

78. A computer's CPU overheats and shuts down the system intermittently. Which of the following steps should be taken to fix the problem? (Select the two best answers.)

- A. Check if the heat sink is secure.
- B. Check the BIOS temperature threshold.
- C. Check if the fan is connected.
- D. Check if the RAM needs to be reseated.

Quick Answer: [92](#)

Detailed Answer: [105](#)

79. A burning smell comes from the computer. Which of the following is the most likely source?

- A. Thermal compound
- B. Keyboard
- C. Power supply
- D. AC outlet

Quick Answer: [92](#)

Detailed Answer: [106](#)

80. Which of the following commands shows you the current network sessions from a PC to the Internet?

- A. Ipconfig
- B. Ping
- C. Netstat
- D. Nbtstat
- E. ARP

Quick Answer: [92](#)

Detailed Answer: [106](#)

Quick-Check Answer Key

- [1.](#) C
- [2.](#) A
- [3.](#) B
- [4.](#) B
- [5.](#) C
- [6.](#) A
- [7.](#) D
- [8.](#) B
- [9.](#) D
- [10.](#) C
- [11.](#) A
- [12.](#) C
- [13.](#) B
- [14.](#) A, E

- 15. B
- 16. A
- 17. D
- 18. C
- 19. A
- 20. B
- 21. A
- 22. B
- 23. D
- 24. A, E
- 25. B
- 26. C, E
- 27. B
- 28. D
- 29. A, C, D, F
- 30. C, D
- 31. C
- 32. D
- 33. B
- 34. C
- 35. C
- 36. C
- 37. A
- 38. B
- 39. D
- 40. A
- 41. B
- 42. B
- 43. C
- 44. C
- 45. D
- 46. D
- 47. A

48. C

49. A

50. C

51. B

52. D

53. B, D

54. C

55. A, C, D

56. C

57. B

58. C

59. D

60. C

61. C

62. A, D

63. C

64. A

65. B

66. B

67. C

68. A, D

69. B

70. C

71. D

72. C

73. D

74. A

75. C

76. A, C, E

77. A, C

78. A, C

79. C

80. C

Answers and Explanations

- 1. Answer: C.** The default bus speed (without overclocking) for a Core i5 3.1 GHz CPU is 100 MHz. The maximum multiplier is 31 times that, or 3.1 GHz. But that is only if the processor requires it. Often, a CPU such as this will hover at around 1600 MHz (1.6 GHz), for a multiplier of 16. The multiplier is variable and will only increase if the system runs more applications and requires more CPU power. Of course, many Intel CPUs also have Turbo Boost technology, which allows the CPU's speed to be raised by 10 percent beyond the maximum; in this case, it would be up to 3.4 GHz when needed. This is a basic and fairly safe type of overclocking. Many motherboards also let you increase the system bus speed. Some boards stop you at, say, 105 MHz; others let you overclock the system bus to as high as 300 MHz (not recommended). Treat overclocking with extreme caution—the increased voltage and ensuing heat can easily cause the CPU to overheat causing damage to the CPU and other devices in the system, as well as possibly corrupting data stored on the hard drive.
- 2. Answer: A.** Thermal expansion and contraction happen when humidity changes quickly. This can lead to what some technicians refer to as “chip creep” or “card creep.” Although there might have been chip creep, the direct cause of the problem was most likely thermal expansion/contraction. POST errors would not be the cause of the error but in some cases could give you diagnostic information leading to the cause. Thermal sublimation deals with a specific type of printing process and is not involved in the problem. While in the computer, you might want to check other adapter cards in case they were affected by this phenomenon as well.
- 3. Answer: B.** You should recommend configuring the laptop power options to power saver plan. The power saver plan will dim the display, shut down the display and hard drives after 10 minutes or so, and put the computer to sleep soon after that. This helps to conserve battery power. You can also suggest that the user close applications when not in use and turn off Bluetooth and Wi-Fi while they are not being used. Disabling special video effects in Windows can also conserve battery power. Keeping the device stored in a dry cool area out of direct sunlight also helps. Finally, tell the user that he should charge the battery often! As for the other answers: Restoring power usage when the laptop is unattended would seem like the opposite of conserving battery power. Removing the battery definitely conserves

battery power, but at the cost of not using it anymore. Only fully discharge the battery if it will not hold a charge anymore. If that doesn't help, replace the battery. The question's scenario says nothing about the battery not charging; it simply says that the battery is often low on power.

4. Answer: B. Most likely, repetitive flashing lights on a keyboard indicate the presence of a hardware error, probably internal to the computer. If nothing comes up on the display, and all you have to go by are flashing lights on the keyboard, you can probably ascertain that the POST has failed and that the problem lies within the big four (as I like to call them): CPU, RAM, video, or motherboard. Software errors can't occur until the operating system attempts to boot, and without the POST finishing successfully, that won't happen.

Passwords are required when you see a repetitive flashing light on the screen, not on the keyboard—and even then, only if you are attempting to access the BIOS (or UEFI) or if someone configured a user password in the BIOS. External peripherals don't need to post properly for the computer to boot to the OS. Even the keyboard isn't necessary. The POST is more interested in the guts of the computer, especially the big four and the hard drive.

5. Answer: C. Fiber optic networks use fiber optic cables that have a core of plastic or glass fibers. These are much more difficult to eavesdrop on than any copper cable. Satellite connections and cable Internet use RG-6. DSL uses a standard phone line or other twisted-pair cable. These other options are copper-based.

6. Answer: A. The only real difference listed between cellular WAN cards and WLAN cards is that a cellular WAN card requires a subscription to a cellular provider, whereas a WLAN card can work without provider payment. There are plenty of free Wi-Fi (WLAN) networks out there. It is cellular WAN cards that are more proprietary. You would have to get a WAN card that matches your service: AT&T, Verizon, and so on. On to the other answers: It is the WAN card that has a range of miles, whereas the WLAN card will be limited to approximately 820 feet outdoors (if 802.11n or ac, less for other WLAN standards). Finally, both WLAN and WAN cards can be external or internal. Remember that wireless LAN (WLAN) technologies that are ratified by the IEEE such as 802.11ac, 802.11n and 802.11g are commonly referred to as Wi-Fi. However, remember that Wi-Fi is a registered trademark, and the actual

technologies you are using are technically known as WLAN.

7. Answer: D. The port numbers 21, 22, 25, 53, 443, and 3389 correspond to the protocols FTP, SSH, SMTP, DNS, HTTPS, and RDP. The Telnet protocol uses port 23. Telnet is deprecated, insecure, and outdated; plus it isn't even enabled or installed on newer versions of operating systems. Use SSH in its place for a more secure connection. HTTP uses port 80. POP3 uses port 110. Know your port numbers!

8. Answer: B. The process order for installing a new hard drive controller card is to: 1. Apply system updates; 2. Update the BIOS; 3. Install the card physically; 4. Install the driver; and finally 5. Upgrade the card's firmware. That's the smartest list of steps for any hardware upgrade. You want to update the BIOS before installing the card, so that the BIOS will have a better chance of recognizing it. Of course, you should have made sure that the card is compatible with the motherboard and your version of Windows before purchasing. Update the controller card's firmware last. All of the other listed orders have anomalies that could lead to errors. For example, applying the system updates last would cause Windows to recognize the card properly too late. It might also cause Windows to attempt to install a Microsoft driver when you really want the manufacturer's driver. When upgrading, think this way: Windows updates, BIOS updates, physical install, driver install, special firmware upgrades. Then test it, and if it tests true, sit back and whistle your favorite tune. All PC techs do that, right?

9. Answer: D. The main power connection should have 24 pins. Just about all PCs you will see will have a 24-pin power cable. So the question was more of a tricky one. It's not asking for the video power connection, which could be a single 6-pin, a double 6-pin, or a single 8-pin; that depends on the type of video card. You have to remember that powerful video cards require more powerful power supplies. Older systems used the 20-pin main power connector, but those are rare nowadays, even if you are upgrading an older computer. 40 pins is the amount of pins an IDE hard drive's data cable has. You might ask "Who cares about IDE?" The answer: CompTIA. It's on the objectives (in the acronym list) so you should know it. But also, you will still be dealing with IDE drives, whether it is on older computers or on systems that you are upgrading (or restoring data from).

10. Answer: C. Eight USB cables minimum are required for this configuration—one for the USB mouse, one for the USB keyboard, and six for the PCs that are connecting to the KVM switch (two each). A KVM switch allows you to control two or more computers with a single keyboard and mouse. The device also needs only one display. Of course, you can look at only one computer's video display at a time. This kind of device is great for training purposes and lab and testing environments.

11. Answer: A. If a motherboard supports it at all, the board will support PC3-10600 running at 1,333 megatransfers per second (MT/s) and at 1066 MT/s. A PC3-10600 module is DDR3-1333. The default data rate is 1333 MT/s, but it can be underclocked to 1066 MT/s. You might see this referred to as 1333 and 1066 MHz, respectively, but that is not accurate. DDR3-1333 actually has an I/O bus clock rate of 667 MHz; it's the data rate that is 1333 MT/s. Most motherboards can underclock a RAM module by at least one step if necessary. For example, if you have a motherboard that can normally only handle DDR3-1066 memory modules, you could still install DDR3-1333 memory modules, but they would be automatically underclocked to 1066. If you were to see this question expressed as the I/O bus clock rate, then PC3-10600 would run at 667 MHz (the default) and 533 MHz (underclocked). Some RAM modules and motherboards support underclocking even further; for example, in this scenario as low as 400 MHz (800 MT/s.) Of course, another option (though not recommended) would be to overclock the motherboard to meet the data rate of the new RAM. The key in this question is to know the various data rates of DDR. To sum up: Any particular memory module will usually run at least one step slower than its default rate.

12. Answer: C. It's the surface area of the heat sink that has the greatest effect on heat dispersion. The more solid the bond between the heat sink and CPU cap, the better the transition of heat out of the CPU. To aid in this, thermal compound must be used.

13. Answer: B. The best answer here is to select a single 8 GB DDR3 PC3-12800 memory module. Even though it is faster than the current RAM, it can be underclocked automatically by most PC motherboards to match the PC3-10600 speed. Note that the question stated that RAM is assumed to be the same price per MB. The current 2 GB memory module in Slot 2 would be removed, and the

new 8 GB module would replace it. When finished, that and the current memory module in Slot 1 would equal 12 GB total. The 6 GB module wouldn't work because there would be no way to achieve 12 GB mathematically (we are limited to two slots). The 10 GB module would work mathematically (if we removed the current module in Slot 1) but would be more expensive as opposed to an 8 GB module (more GB, more money). Finally, two 6 GB modules would work if we removed both current modules, but it would be even more expensive. Compatibility is quite important, but in some situations you might actually purchase a faster type of RAM to save money!

14. Answers: A and E. Of the listed answers, continuity and resistance are the settings that should be used when there is no electrical flow through the part being tested, and you want to be sure that there is no electrical flow when doing these tests! Examples of continuity or resistance tests include testing a fuse's impedance (measured in ohms) and testing a network cable for continuity. In each example, you don't want any electricity flowing through the device or line. It would give erratic results and could possibly cause damage to your testing equipment, and even you. When testing for watts, volts, and amps, you need to have electricity flowing through the item you want to test.

15. Answer: B. You will be implementing a virtualization workstation and thin clients. The virtualization workstation will run virtual software that will allow you to install the server software to a virtual machine (VM). This server provides most of the resources for the clients on the network—the thin clients. Thin clients normally have very limited resources of their own and rely on the server (be it a regular or virtual server) for the additional resources they need. A CAD/CAM workstation is used for computer-aided design and manufacturing. PCs have plenty of their own resources and do not need a server supplying those resources. A home server PC is a possibility in this scenario if it runs in a virtual environment. However, thick clients don't meet the requirements of this scenario. Thick clients have plenty of resources and are often used as another name for PCs. An AV workstation is an audio/video workstation, not a server, and laptops are not thin clients; they also have plenty of internal resources.

16. Answer: A. The Simple Mail Transport Protocol (SMTP) is not

configured properly. That is the protocol used to send mail. POP3 receives email. FTP enables two computers to upload and download files. HTTP is the protocol used by web browsers to surf the Internet.

- 17. Answer: D.** Use a plastic shim to open the display or remove the bezel that surrounds it. Pliers have many uses but could cause damage to the plastic that surrounds the display of a laptop. Plastic tweezers are used to remove hard-to-reach parts such as screws from the inside of a PC. Flathead screwdrivers are not recommended because the metal can damage the plastic case of the laptop.
- 18. Answer: C.** The power-on self-test (POST) checks the CPU, memory, video card, and so on when the computer first boots and displays any error messages if any errors occur. The POST is a part of the BIOS. The CMOS chip retains settings that the BIOS records during the POST. The bootstrap loader is within the ROM chip as well. When the computer is turned on, it automatically reads the hard drive boot sector to continue the process of booting the operating system.
- 19. Answer: A.** The primary corona wire places a negative charge on the photosensitive drum. A positive charge is applied to the paper by the transfer corona wire later in the laser printer imaging process. Toner is placed on the drum from the toner hopper. The toner is attracted to the areas that have a lesser negative charge. Static electricity is removed by a static eliminator strip.
- 20. Answer: B.** The complementary metal-oxide semiconductor (CMOS) retains (stores) changing or variable information such as the time and date. It is volatile, so a lithium battery (usually a CR2032) is used to power the CMOS when the computer is off. The BIOS or setup can locate and identify devices but does not store the variable information mentioned. The term “*Setup*” is usually associated with the file (setup.exe) which installs Windows and programs to be installed to Windows.
- 21. Answer: A.** The AT&V modem diagnostic command is used to verify connectivity and display settings between a computer and a connected dial-up modem. Most modem commands begin with AT. IRQ stands for Interrupt ReQuest, a number assigned to a device that allows it to initiate communication with the CPU. The MBR is the master boot record. A boot sector on PCs, it is 512 bytes in size and is within the first sector of the hard drive. It often holds the partition table and/or bootstrapping information. QPI stands for QuickPath

Interconnect, an Intel technology that connects the chipset to the CPU. It is a more powerful version of the Direct Media Interface (DMI).

22. Answer: B. Bluetooth works well as a short-range wireless communication technology. Cellular is longer range and actually for sending data (for example, an ExpressCard GPRS cellular data card). USB and Ethernet are wired! And there are no Ethernet mice, except for the ones that crawl around the network looking for the exit, but they are of no consequence.

23. Answer: D. A power-on self-test (POST) card can be used to test all hardware on a computer prior to installing an operating system. More often, it is used to troubleshoot computer boot-up problems. The BIOS employs its own POST, but this is limited compared to what a POST adapter card can do. POST testers are available in different form factors besides adapter cards; for example, some motherboards have a built-in POST tester. If an OS hasn't been installed yet, we can't use Windows to test hardware (and probably wouldn't want to rely on that anyway).

24. Answers: A and E. Use a multimeter or a power supply unit (PSU) tester to test the voltage of a power supply. The multimeter will test one wire at a time, whereas the PSU tester will test the entire main power connection all at once. Loopback plugs are used to test RJ45 ports on network adapters and COM1 serial ports. Cable testers are used to test networking cables. An antistatic mat is used to reduce ESD when working on a computer.

25. Answer: B. The only solution listed is to upgrade the video card. This is the only way that computer performance can be increased while Aero is running. The CPU and RAM can make the system faster when dealing with applications and calculations of many kinds, but when it comes to the video configurations, a 64 MB video card is just too weak. No matter how much RAM you add or what CPU you put in, the video will still perform like an actor on the late, late, late movie—badly. Increasing the hard drive capacity will have no effect on video but can definitely help in other areas of system performance such as pagefile access and general data access.

26. Answers: C and E. The LGA 1155 socket was the first replacement for the LGA 1156 socket. Even though it is one number less, it is the newer socket type. It is commonly used with Intel Core i3, i5, and i7 CPUs. The LGA 1150 replaces the 1155 and therefore the 1156 as

well. LGA 775 is used by older Intel Core 2 Duo and similar CPUs. The 940 is an AMD socket, used with Opteron and Athlon 64 FX CPUs. The LGA 1366 is used with Intel Core i7 CPUs.

27. Answer: B. The Direct Media Interface (DMI) connection has a data transfer rate of 20 Gb/s or 2.5 GB/s. The DMI is the high-speed point-to-point interconnection mechanism between the CPU and the chipset. 1000 Mbps is the data transfer rate of gigabit Ethernet. 3.0 Gb/s is the data rate of SATA revision 2.0. 5 Gbps is the data rate of USB 3.0.

28. Answer: D. You should select the microATX form factor and the HDMI video output for an HTPC. ATX is acceptable but won't fit in most HTPC designed cases. Mobile-ITX and Pico-ITX are used by ultra-mobile PCs (UMPCs) and smartphones. DVI is the standard video connector for regular PCs, but for a true multimedia experience, you want HDMI—not only for its capabilities with HD formats, but also because it carries HD audio signal as well. RG-6 is the network connection on a cable modem or set-top box (STB).

29. Answers: A, C, D, and F. The time/date, boot priority (boot sequence), passwords, and Wake-on-LAN (WOL) can all be configured in the BIOS/UEFI. However, the registry and USB drivers are configured in Windows.

30. Answers: C and D. The first thing you should do is put on your antistatic strap. The last thing you should do is test the motherboard. Always remember to test! You already selected the motherboard. Technically, installing the CPU isn't really part of the motherboard installation process. But you can't really test the motherboard without it. Either way, the CPU would be installed before testing. Cables need to be connected during the installation and prior to testing. But anything that deals with power or circuit boards should not be touched unless you are wearing an antistatic strap.

31. Answer: C. To test IPv4, use the command `ping 127.0.0.1`. To test IPv6, use the command `ping ::1`. You don't run ipconfig commands to particular IP addresses. There is no `ping :1` or `ping 127::1` commands.

32. Answer: D. 4.2 ms (milliseconds) is the typical latency of a SATA magnetic-based hard disk drive. When dealing with magnetic drives, latency is the delay in time before a particular sector on the platter can be read. It is directly linked to rotational speed. A hard drive

with a rotational speed of 7200 RPM has an average latency of 4.2 ms. 300 MB/s is the data transfer rate of a SATA revision 2.0 hard drive; it is also expressed as 3.0 Gb/s. 16 MB is a common amount of cache memory on a hard drive; it is usually DRAM.

33. Answer: B. A maintenance kit includes a new fuser assembly, rollers, and more. Installing a maintenance kit is like changing a car's oil (although it isn't done as often). You could also sing "Happy Birthday," but that would just be silly. Cleaning the printer might not be necessary. If you have a toner spill or work in a dirty environment, it might be a good idea. Clearing the counter is something you might do on an inkjet printer; it clears the counter of how much ink goes through the cartridge. Printing a test page is important when first installing a printer and when you finish installing a maintenance kit.

34. Answer: C. Because light is what affects the drum, the drum should remain sealed in the toner cartridge. Keep the cartridge away from magnets, too. If a toner cartridge breaks or forms a crack, recycle it and install a new toner cartridge.

35. Answer: C. Use a power supply unit (PSU) tester to determine why a computer fails to boot. One of culprits could be a faulty power supply. A cable tester checks network cables only to see if they are wired correctly and have continuity. Loopback plugs are used to test network cards and serial ports. The tone and probe kit is used to test phone lines and network connections for continuity. So, the rest of the answers are all tools that are used externally from the computer, whereas the PSU tester is the only one used inside the computer.

36. Answer: C. L3 cache is shared by all of the cores of the CPU. L1 cache (often 32 KB per core) is built in to the CPU. L2 cache (often 256 KB per core) is built on to the CPU; it is also known as on-die. DRAM is the memory modules you install into the slots in the motherboard. DRAM is not cache memory. Some people consider DRAM to be L4 cache, but there is an actual CPU cache known as L4 used by Xeon and other high-end processors.

37. Answer: A. Hyper-threading (for example, Intel HT) calculates two independent sets of instructions simultaneously, simulating two CPUs. HyperTransport is a high-speed link between various devices such as the CPU and northbridge on AMD systems. Turbo Boost is a basic form of overclocking that Intel allows with many of their processors. Multi-core is the technology where a CPU physically

contains two or more processor cores. Newer Intel CPU designs combine multi-core technology with hyper-threading to allow for even more processing.

38. Answer: B. The thermal design power (TDP) of a CPU is measured in watts. For example, a typical Core i5 CPU might be rated at 95 watts or less. Older single-core CPUs were rated as high as 215 watts. The less the wattage rating, the less the computer's cooling system needs to dissipate heat generated by the CPU.

39. Answer: D. The tone and probe kit allows you to find the network drop in the wiring closet. How this would work is that you would take the tone generator portion of the tone and probe kit and connect it via RJ45 to the network port in the user's cubicle. Switch it on so it creates tone. Then go to the wiring closet (or network room or server room) and use the probe (an inductive amplifier) to find the tone. You do this by pressing the probe against each of the cables. This is an excellent method when there are dozens, or hundreds, of cables in the wiring closet. Once you find the right cable, plug it into the patch panel or directly to a network switch. When you return to the user's cubicle, the RJ45 jack should be hot, meaning it can be used to send and receive data. As for the other answers: A PSU tester tests the power supply of a computer. A multimeter can test any wire's voltage or AC outlets. Cable tester is somewhat of a vague term, but it usually either means a network patch cable tester or a LAN tester, which checks the individual wires of longer network cable runs.

40. Answer: A. SATA power connections have 3.3, 5, and 12-volt wires. There are no negative voltage wires on SATA power connections. Molex power connections use 5 V and 12 V only, but SATA includes the 3.3 volt line. In this scenario, you should test the SATA power connector and the main power connector from the power supply with your trusty PSU tester. (Most PSU testers have an SATA power port in addition to the main 24-pin power port.)

41. Answer: B. Print a test page after doing preventative maintenance to a laser printer. Normally when you maintenance a laser printer, you power it down and unplug it before any work begins. So there is no need to restart the printer; when you finish, you simply start it. There is also no need to restore a printer to factory settings unless it fails. Your preventative maintenance will hopefully stave off that dark day. The paper trays probably still have paper in them, and regardless, part of preventative maintenance is to fill the trays. But

printing the test page should be last.

42. Answer: B. As of the writing of this book, external SATA (eSATA) typically runs at 3.0 Gbps, which is the fastest of the listed answers. USB 2.0 is limited to 480 Mbps. IEEE 1394a is limited to 400 Mbps. 1000BASE-T is a networking connection that offers 1000 Mbps. However, if you had USB 3.0 or higher, your data rate would be at least 5.0 Gbps, and that would be the winner. It's a constant battle though, and newer versions of technologies are always being released.

43. Answer: C. Bluetooth works best for a direct wireless connection; in fact, it is the only wireless connection listed. FireWire and IEEE 1394 are effectively the same (IEEE 1394 is the equivalent PC standard), and IEEE 1284 is the standard for wired parallel port printing.

44. Answer: C. Amperage can be defined as electric current or the movement of electric charge. It is measured in amps (A). You should know your circuits in your office. The more you know, the less chance of overloading them. For example, a standard 15-amp circuit might be able to handle three or four computers and monitors. But a 20-amp circuit can handle a computer or two more. Circuit breakers, electrical cable, and outlets all must comply with a certain amount of amps. If you connect a power strip or surge protector, make sure that it is specified to work with your circuit's amp rating. Voltage is a representation of potential energy, measured in volts (V). Wattage is electric power, the rate of electric energy in a circuit, measured in watts (W). Impedance is the amount of resistance to electricity, measured in ohms (Ω).

45. Answer: D. Homes in the United States are wired for 120 volts alternating current (AC). The wires inside a PC might be 12 volts direct current (DC), 5 volts, or 3.3 volts.

46. Answer: D. Use a simple moist cloth, not too wet; you don't want to get any liquid inside the printer. Alcohol will be too strong, and WD-40 will cause damage in the long run. Soap and water can be used to clean the outside of a computer case.

47. Answer: A. The universal naming convention (UNC) \\computername\C\$ or \\ipaddress\C\$ would be the best option. This allows the administrator to connect to the hidden share for the root of C. If the administrator has issues connecting to a network volume with a particular share name, they should use the hidden share. This

can be done by computer name or by IP address. It would not be necessary to connect utilizing HTTP. Also, it is not wise to share the C: drive with a share name called “C.”

48. Answer: C. In DHCP, set a reservation by MAC address. In this scenario, the clients are most likely connecting to the printer by IP address. The Internet Printing Protocol (IPP) is often used in this manner. By default, the moment the new printer is connected to the network, it acquires an IP address from the DHCP server—a new IP address, different from the one used by the old printer. This causes the clients to fail when attempting to connect, and print, to the new printer. To prevent this, we go to the router (or other DHCP device) and configure a MAC address reservation. The MAC address of the printer (which might be on a label or can be accessed from the onscreen display) can be plugged into the DHCP server and reserved to a specific IP address. Of course, a better option would be to simply configure the printer to use a static IP address. As to the other answers, renaming the printer with the old name won’t help because the client computers are most likely connecting by IP, not by name. Printing the configuration page is great and might help you to figure out what the problem could be, but it doesn’t actually solve the problem!

49. Answer: A. IPP stands for the Internet Printing Protocol. It is a common standard used for remote printing. IPP paths are similar to HTTP paths, but instead they begin with the letters ipp. IPP supports access control, authentication, and encryption-enabling secure printing. Some organizations prefer to use IPP instead of UNC paths. Although answer B could be a possibility, it would be more likely to use IPP instead of HTTPS. However, the IP address in answer B is also incorrect; the second octet is a 1 instead of a 10. Answer C isn’t correct syntax; two slashes should be preceded by some kind of protocol such as IPP or HTTP. Or if this was meant to be a UNC, the slashes should be backslashes; however, a UNC was the original path that failed, so it is incorrect either way. Answer D is showing backslashes in the path instead of the proper slashes.

50. Answer: C. Hypertext Transfer Protocol Secure (HTTPS) is used to make secure connections to websites. It uses the Secure Socket Layer (SSL) or Transport Layer Security (TLS) protocols to encrypt the connection and make it safe for logins, purchases, and so on. HTTPS relies on port 443. SSH stands for Secure Shell; this is used

to make secure remote connections between computers for the purposes of command execution and remote control, and it replaces the deprecated Telnet protocol. It uses port 22. SFTP is the SSH File Transfer Protocol, a more secure version of FTP that is built on SSH. Kerberos is a network authentication protocol used by various systems including Microsoft domains. It uses port 88.

51. Answer: B. The Simple Network Management Protocol (SNMP) can be used to monitor remote computers and printers. This requires the installation of SNMP on the appropriate hosts. SMTP is the Simple Mail Transfer Protocol, which deals with the sending of e-mail. TCP/IP is the entire suite of protocols that we use when we connect to an IP network. IPP is the Internet Printing Protocol, which allows hosts to print documents to a remote printer without the need for UNC paths. DNS is the Domain Name System, which resolves domain names to their corresponding IP addresses.

52. Answer: D. You should recommend that your coworker unplug the power cord to prevent shorts. Always unplug the computer before working on it. There are other tools that you can use as well—for example, the three-prong parts grabber or, for something nonmetallic, the plastic tweezers. You could also try turning the computer upside down and letting gravity do its thing (if the computer is light enough). Backing up the computer’s data is not necessary if you take the right precautions. Definitely do not turn on the computer. Make sure the computer is off and unplugged.

53. Answers: B and D. Unicast IPv6 addresses are addresses assigned to one interface on a host. Examples of unicast IPv6 addresses include global unicast addresses that begin at 2000, link-local addresses that begin at FE80::/10, and the loopback address ::1. Addresses assigned to a group of interfaces where the packets are delivered to all interfaces are known as multicast addresses. Addresses assigned to a group of interfaces where the packets are delivered to the first interface only are known as anycast addresses.

54. Answer: C. An indication of a power supply issue is frequent failure of hard drives. If the power supply fails to provide clean power to the 3.3 V, 5 V, and 12 V lines to the hard drives, then they will fail frequently. These are often the first devices to fail when a power supply starts having intermittent problems. You should test this with a power supply tester or multimeter. If the power supply fails, the CPU would not overclock—quite the reverse, it might lose

power and turn the computer off altogether. Overclocking is controlled in the BIOS, and there are thresholds in place to stop the CPU from overclocking too far. The wireless adapter would either work or not work. Reduced range could be due to obstruction or distance from the wireless access point. If the CD burner takes longer to write data than usual, it could be because the system is busy doing other tasks, or perhaps the burn rate setting was lowered.

55. Answers: A, C, and D. CAD/CAM workstations, virtualization workstations, and gaming PCs all require powerful CPUs with multiple cores—as many cores as possible. The other custom PCs are not nearly as reliant on CPUs. Audio/video editing workstations rely most on specialized audio and video cards, dual monitors, and fast hard drives. Home theater PCs (HTPCs) require surround sound audio, HDMI output, compact form factors, and possibly TV tuners and video capture cards. Home server PCs rely on RAID arrays and powerful network cards.

56. Answer: C. You should select a barcode reader. This reads barcodes such as UPC barcodes that have groupings of parallel lines of varying widths. A biometric scanner authenticates individuals by scanning physical characteristics such as fingerprints. There are many types of image scanners; multifunction printers have these and allow you to scan in photos or make copies of documents. The touchpad is a device that takes the place of a mouse. It is often used in laptops but can be purchased as an external peripheral for PCs as well.

57. Answer: B. The best answer is two PCI Express (PCIe) version 3 slots. For SLI to work properly, you need two identical PCIe (PCI Express) slots. Version 2 PCIe slots are probably too slow for the type of video cards that are installed to an SLI configuration, so version 3 PCIe becomes necessary. Although older SLI cards were available for PCI, the technology cannot span different expansion slots. USB is not an expansion slot at all; it is a port as mentioned and does not work together with PCIe in an SLI configuration.

58. Answer: C. SATA revision 3.0 (maximum transfer rate of 6 Gb/s or 600 MB/s) can send and receive twice as much data as SATA Revision 2.0 (maximum transfer rate of 3 Gb/s or 300 MB/s). This makes it the better choice for audio and video applications and would be the most valid reason why you would select it for a new computer. Of course, SATA revision 3.2 offers much higher data

transfer rates. Always consider the latest technology when designing a system.

When building a new computer, you would most likely start with an internal drive. You might add an external drive later, but regardless, just having an external drive is not a reason to use SATA 3.0 over SATA 2.0. SATA drives are not hot-swappable by default, whether they are internal or external. Special drive enclosures can be purchased to make a SATA drive hot-swappable, however. Neither SATA 2.0 nor SATA 3.0 uses jumpers. IDE drives are the most well-known for their use of jumpers, but these are rarely found today as they have been completely overwhelmed by SATA.

59. Answer: D. The extension magnet is the best of the listed answers. Just remember to turn off power and disconnect the power cable before attempting this. Pliers are too big and bulky a tool to use in this situation. They can too easily damage components on a motherboard or other device. The antistatic wrist strap should always be worn, but it is not meant to pick up items. Because it is not specified, we have to assume that the answer “Tweezers” means metal tweezers. It is better to use an extension magnet—a tool more conforming to the job—than a metal object. However, if you have plastic tweezers or a three-prong pickup tool, you should use those before the extension magnet.

60. Answer: C. You should install a PC3-12800 memory module. If you don't have the exact speed RAM, go with a memory module that is one step higher. That RAM should underclock to match the motherboard. However, the best thing to do is to get the closest compatible RAM to the motherboard! Anyway, it's better to go up one level first. If the PC works without any errors, then all is good. If you install slower RAM such as PC3-8500 (which is DDR3-1066 by the way) or PC3-6400, the customer will end up with a slower computer than they originally started with.

61. Answer: C. RAID 5 is fault-tolerant and allows for striping *with parity* (given you have three drives minimum to dedicate to the array). It's the parity information that makes it fault-tolerant. RAID 0 is simply striping of data. It is not fault-tolerant, meaning that it cannot recreate data after a failure or continue to function after a failure. RAID 1 is mirroring; it requires two drives and is fault tolerant. (An advanced version of RAID 1 is called disk duplexing when each hard drive in the mirror is connected to its own hard drive

controller.) RAID 10 is a stripe of mirrors. It requires four drives and is fault-tolerant. It stripes the mirrors, but does not stripe with parity.

62. Answers: A and D. The mouse can move erratically due to an incorrect driver or an uneven surface. Remember to visit the manufacturer of the device to get the latest and greatest driver. That should fix the problem. But optical mice are very sensitive and need to be on an even, flat surface. Also, it helps if that surface is non-reflective. Optical mice don't have a trackball. Older ball mice had these, and they would have to be cleaned to fix this problem. The mouse should not conflict with the keyboard. Older PS/2 mice would not because they used a separate IRQ from the PS/2 keyboard. Newer USB mice won't either. Every USB device gets its own resources; this is taken care of by the USB controller. Finally, if the mouse needs to be charged, it should simply stop working. Some mice use double AA batteries that simply need to be replaced.

63. Answer: C. You should check the wall outlet first if you are dealing with a power issue. Because power comes from the AC outlet, it should be foremost on your mind. Now, if you already deduced that the wall outlet is not causing a problem, check the power supply next. Input devices won't often cause a power issue unless they are active devices, meaning they plug into an AC outlet. But once again, you would unplug them and check the AC outlet that they are plugged into. Phone and network cabling can carry power surges and spikes, especially if they are not installed or grounded properly. However, it is less likely that the power issue emanates from a networking or telecommunications cable. After checking the wall outlet and power supply, unplug these from the computer when troubleshooting power issues.

64. Answer: A. If a computer is attempting to obtain an IP address automatically and it receives the IP address 169.254.127.1, or any other IP address starting with 169.254, then DHCP has failed either at the client or the server. When this happens, Windows automatically assigns an APIPA address. The computer will be able to communicate only with other computers on the 169.254 network, which is pretty worthless if that is not your main network number. What went wrong? It could be one of several things. Perhaps the DHCP client service on the client computer needs to be restarted. Or maybe the computer is not connected to the right network. Still yet it could be a problem with the server: lack of IP addresses, the DHCP

service failed, the DHCP server is down, and so on. DNS deals with resolving domain names to IP addresses; it doesn't affect DHCP address assignment. The Windows Internet Name Service is an older Microsoft service that resolves NetBIOS names to IP addresses; like DNS, it doesn't affect DHCP. Both DNS and WINS could fail and a computer could still obtain an IP address from a DHCP server. If APIPA failed, then the computer wouldn't be able to get an address on the 169.254 network. If DHCP and APIPA were both to fail, the client computer would effectively have an IP address of 0.0.0.0. (or nothing would be listed in the ipconfig screen) placing the computer in the Twilight Zone.

Note

If you did not understand any of the acronyms used in that explanation, or you are having any trouble with any of the concepts listed (besides the Twilight Zone), then it is a strong indicator that you need to study more.

65. Answer: B. Remove the CMOS battery from the motherboard.

Normally, this resets any variable settings in the BIOS/UEFI such as the password and time/date. Some systems also have a BIOS configuration jumper that must be moved to another position in addition to removing the battery. Removing the RAM doesn't do anything. When the computer is turned off, RAM contents are emptied. There are usually no RAM jumpers on today's motherboards. Removing the main power connection from the motherboard will have no effect if the computer was already turned off and unplugged. By the way, RAM and power connections should not be removed unless the power has been shut off and the AC cable has been unplugged.

66. Answer: B. One hard drive can fail in a RAID 5 array, and the array will be able to rebuild that drive's data from the remaining drives. However, if a second drive fails, the array is toast. That is because the array requires the parity information from all the other drives. Now, if you had a RAID 6 array (which includes another parity stripe), you could lose as many as two drives and still continue to function. Regardless, be sure to have a backup plan in place.

67. Answer: C. Remove the hard drive before releasing a computer to a third party. There could very well be confidential company data on

the drive. Store the drive in a locking cabinet. Don't worry, the manufacturer of the laptop has plenty of hard drives to make it work! There is no need to remove the LCD or WLAN card because these do not contain confidential information. You could clean it if you want, but do you really have time for that?

- 68. Answers: A and D.** Intel CPU virtualization is named VT-x. AMD CPU virtualization is named AMD-V. AMD-Vi is the name for AMD chipset virtualization. VT-d is the name for Intel chipset virtualization.
- 69. Answer: B.** 432 Mb/s is the answer at 12x speed. The default 1x speed of Blu-ray allows a data rate of 36 Mb/s (4.5 MB/s). 50 GB is the maximum storage capacity of a standard size dual layer Blu-ray disc. 150 KB/s is the 1x data rate of a CD-ROM drive.
- 70. Answer: C.** DVI-I accepts analog and digital video signals. All DVI ports are video only. DVI-D is digital only as you would guess from the *D*, and DVI-A is analog only. HDMI can accept video *and* audio signals. HDMI type B is known as double bandwidth; it supports higher resolutions than type A.
- 71. Answer: D.** Wi-Fi tethering is when a mobile device shares its Internet connection with other Wi-Fi capable devices. This is often referred to as a mobile hotspot. USB tethering is when a mobile device shares its Internet connection with a PC or laptop via USB. *Wi-Fi sharing* is not a typically used term. Internet pass-through is when a mobile device connects to a PC via USB, making use of the PC's Internet connection—basically the reverse of USB tethering.
- 72. Answer: C.** The docking station allows the user to connect more USB devices. If the keyboard, mouse, and scanner all use USB, then the laptop doesn't have enough USB ports and the docking station resolves the problem. Another solution would be a USB hub (perhaps a cheaper one at that, and mobile). The monitor connects to either a VGA or DVI port, which isn't mentioned in the scenario, though most laptops *and* docking stations have a secondary video port. KVM switches are used to control two or more computers from a single group of devices: keyboard, mouse, and display. IEEE 1394 connections are great solutions for external hard drives and audio/video devices, but not for scanners. Bluetooth adapters can be used for keyboards and mice, but it's the scanner that is causing the need for extra ports. Scanners often connect via USB and not Bluetooth.

73. Answer: D. Add memory to the printer. Large documents, especially ones with graphics, require more memory to print. A printer's memory can be upgraded in a similar manner to a PC's. The paper won't have an effect on large documents, but it could be an issue if the entry rollers are grabbing more than one piece of paper at a time; that would indicate that the pound size of the paper is too thin. If the communications cable was faulty, no pages would print at all; you would probably get a message on the printer's display warning of a bad connection. If a toner cartridge begins to fail, you will see white lines, smearing, or faded ink.

74. Answer: A. A ghosted image or one that seems to repeat usually means the drum (or the entire toner cartridge including the drum) needs to be replaced. If the printer is offline, you won't be able to print to the printer. An incorrect driver often results in a garbage printout (garbled characters) that is quite unreadable (unless you know garbage printout language). A dirty primary corona wire often results in lines or smearing.

75. Answer: C. You should first attempt reseating the laptop in the docking station; the laptop probably doesn't have a sturdy connection, resulting in a blinking battery light telling you the laptop is not charging properly (or at all). Do this before you attempt to reseat or replace the battery. This is a hardware issue; the operating system does not have an effect on the blinking battery light.

76. Answers: A, C, and E. You can try power cycling the device, checking if the SSID was correct, and forgetting the network and then reconnecting to it. You should also check if the device is within range of the wireless access point, if the device supports the necessary encryption, and if Internet pass-through or other Internet sharing technologies aren't conflicting. Furthermore, you can power cycle the Wi-Fi program, check if any Wi-Fi sleep is enabled, and try enabling best Wi-Fi performance if the device offers it. As to the incorrect answers: Using the cellular GPRS connection is not a valid option when troubleshooting the Wi-Fi connection. Setting up a static IP on a mobile device is usually not a good idea and not necessary—in fact, this is one of the things you should check in the Advanced settings of the device. If a static IP is applied to the Wi-Fi adapter, it could prevent the device from connecting to all wireless networks except the one that uses that IP network number.

77. Answers: A and C. To connect a Bluetooth headset to a

smartphone, you must pair the device to the phone; then, if necessary, you enter a passcode into the phone to use the device. Most mobile devices have Bluetooth installed and will usually recognize devices automatically. If not, you might have to update Bluetooth on the device or update the device's OS. Disabling Wi-Fi is not necessary; however, Wi-Fi and Bluetooth have been known to have conflicts, and sometimes one must be disabled to use the other.

78. Answers: A and C. You should make sure that the heat sink is secure and that the fan is connected. Either of these could cause the CPU to overheat. Also make sure that thermal compound was applied to the heat sink. If you didn't log that you did this in writing somewhere, then you will have to take the heat sink off and inspect it. It's a good idea to log when you apply thermal compound because if you remove the heat sink, you will need to reapply thermal compound before reinstalling it. The BIOS temperature threshold is what tripped, causing the system to shut down. Now, you could increase the threshold, which would fix the problem temporarily but could cause permanent damage to the CPU. The threshold is there to protect the CPU; therefore, "BIOS temperature threshold" is not the best answer. If the RAM needed to be reseated, you might get one of several errors or beeps, but the system should not automatically shut down.

79. Answer: C. The power supply is the most likely source of a burning smell. If it is a very slight smell it could be that the power supply is brand new. New power supplies have a "burn-in" period of 24–48 working hours. However, you should be very careful with this. If the power supply is about to fail, or if it does fail, it could burn up the motor that drives the fan. This could be an electrical and/or fire hazard. So, to be safe, you should remove the power supply and test it in your lab, or call the manufacturer for a replacement. It is possible but unlikely that the thermal compound will cause a burning smell; however, if this does occur, it will be much less noticeable and more chemical in nature. The keyboard should not present a burning smell no matter how fast you type on it. The AC outlet could possibly be the cause of a burning smell and that would be very bad news—disconnect devices from that outlet, turn off the circuit breaker immediately, and/or call an electrician. However, the AC outlet is not part of the computer.

80. Answer: C. Netstat shows the network statistics of a computer. It

displays the network connections by name, IP address, and port of the local and remote computers. Ipconfig shows the network card's configuration. Ping tests if a computer is alive on the network. Nbtstat stands for NetBIOS over TCP/IP statistics. This displays protocol statistics and name tables. ARP is the Address Resolution Protocol; it displays sessions to other computers on the LAN and the MAC addresses and IP addresses of each session. It does not show Internet-based sessions.

Chapter Five. 220-901 Practice Exam D

This fourth 220-901 exam is another advanced practice exam. Again, be ready for a large percentage of scenario-oriented and troubleshooting-based questions.

This is where you prove your stuff. If you can score 90 percent or higher on this practice exam—the first time through—then it is a good indicator of your readiness for the real exam. Still, you should thoroughly understand all of the concepts in this exam before you register for the real exam. Even if you score well, read through the explanations carefully.

Once again, I suggest taking a break between exams. If you did not score 90 percent or higher on the other 220-901 practice exams, do not take this one yet. Go back and study, and then retake those exams until you pass with 90 percent or higher. Then come back to this exam.

Write down your answers and check them against the Quick-Check Answer Key that immediately follows the exam. After the answer key you will find the explanations for all of the answers. Good luck!

Practice Questions

1. A user recently purchased a new wireless 802.11ac router. After connecting a laptop with an 802.11ac wireless adapter to the wireless network, he notices that the signal strength on the laptop is poor and only connects at 54 Mbps. The user moved the laptop next to the WAP but is still experiencing the same issue. Which of the following is most likely the cause?

- A. The cable modem is faulty.
- B. The laptop is connecting to the incorrect wireless network.
- C. The router's wireless card drivers are faulty.
- D. The wireless antennas on the router need to be replaced.

Quick Answer: [127](#)

Detailed Answer: [128](#)

2. Which of the following disk arrays provides for fault tolerance?
(Select the two best answers.)

- A. Spanned volume
- B. RAID 0

- C. RAID 1
- D. RAID 5

Quick Answer: [127](#)

Detailed Answer: [128](#)

3. Which of the following tools should be used to find out which router within the nine steps between you and another computer has failed?

- A. Ping
- B. Tracert
- C. Ipconfig
- D. Net

Quick Answer: [127](#)

Detailed Answer: [128](#)

4. Mary's printer is printing hundreds of pages, and she can't get it to stop. She has tried to delete the job by double-clicking the printer and deleting the print job. Which of the following steps represents the best way to stop the printer?

- A. Clearing the print spooler
- B. Unplugging the printer
- C. Resetting the printer
- D. Turning off the printer

Quick Answer: [127](#)

Detailed Answer: [128](#)

5. Which of the following troubleshooting commands enables you to determine connectivity problems on a Windows computer that cannot connect to the Internet?

- A. ipconfig/release
- B. ipconfig/flushdns
- C. ipconfig/all
- D. ipconfig/renew

Quick Answer: [127](#)

Detailed Answer: [128](#)

6. You are troubleshooting a coworker's computer. When you ping the loopback address, you receive no response. Which of the following

is the most likely cause of this problem?

- A. The LAN is unresponsive.
- B. The DHCP server is down.
- C. The Ethernet cable needs to be replaced.
- D. The TCP/IP protocol is not functioning.

Quick Answer: [127](#)

Detailed Answer: [128](#)

7. You have connected several Bluetooth devices together in an ad-hoc network. Which type of network have you created?

- A. LAN
- B. WAN
- C. PAN
- D. MAN

Quick Answer: [127](#)

Detailed Answer: [129](#)

8. Which of the following steps should be performed when troubleshooting a Bluetooth connection that is malfunctioning? (Select the two best answers.)

- A. Verify that WLAN is enabled.
- B. Check if you are in range.
- C. Unpair the devices.
- D. Turn Bluetooth off and on.

Quick Answer: [127](#)

Detailed Answer: [129](#)

9. A customer brings in a computer that doesn't display anything when it is turned on. You verify that the computer and monitor are receiving power and that the monitor is securely connected to the computer's only video port. Which of the following is the most likely cause of this problem? (Select all that apply.)

- A. Motherboard
- B. RAM
- C. Hard drive
- D. DVD-ROM

- E. CPU
- F. Power supply
- G. Video card
- H. SATA data cable

Quick Answer: [127](#)

Detailed Answer: [129](#)

10. While troubleshooting a network problem, you discover that one set of LED lights on a switch is blinking rapidly even when all other nodes are disconnected. Which of the following is the most likely cause of this problem? (Select the two best answers.)

- A. A switch that is not plugged into a server
- B. A defective hard drive in the computer
- C. A defective network card in the computer
- D. An unplugged server
- E. A defective port on the network switch

Quick Answer: [127](#)

Detailed Answer: [129](#)

11. A user with an Android phone is attempting to get email to work properly. The user can send email but cannot receive it. The user is required to connect to an IMAP server, as well as an SMTP server that uses SSL. Which of the following ports is configured incorrectly?

- A. 25
- B. 110
- C. 143
- D. 443

Quick Answer: [127](#)

Detailed Answer: [129](#)

12. You are called to a school lab to fix a computer. The computer supposedly worked fine the day before, but now it does not power on. The computer is plugged into a power strip with another computer. The other computer works fine. Which of the following is the most likely cause of this problem? (Select the two best answers.)

- A. The power cable is unplugged from the computer.

- B.** The power strip is overloaded.
- C.** The monitor is unplugged.
- D.** The voltage switch on the computer is set incorrectly.
- E.** The power strip is unplugged.

Quick Answer: [127](#)

Detailed Answer: [130](#)

13. Tracy cannot connect to the network and asks you to help. Which of the following steps should be performed first?

- A.** Replace the NIC.
- B.** Reconfigure TCP/IP.
- C.** Check for a link light on the NIC.
- D.** Install the latest NIC drivers.

Quick Answer: [127](#)

Detailed Answer: [130](#)

14. Which of the following hardware cards enables the full functionality of the Windows Media Center live TV option?

- A.** TV tuner
- B.** Modem
- C.** Video card
- D.** Network adapter

Quick Answer: [127](#)

Detailed Answer: [130](#)

15. Your coworker's iPad is having trouble connecting to email. Which of the following steps should be performed to troubleshoot this problem? (Select the three best answers.)

- A.** Verify Internet access.
- B.** Check for Bluetooth connectivity.
- C.** Check port numbers.
- D.** Make sure that GPS is enabled.
- E.** Verify username/password.

Quick Answer: [127](#)

Detailed Answer: [130](#)

16. You just installed Microsoft Windows to a computer with three

internal SATA hard drives and one external USB hard drive. SATA hard drive 1 contains the operating system. SATA hard drive 2 contains the user profiles. SATA hard drive 3 and the external USB flash drive are empty. Where should you place the page file for maximize performance?

- A. External USB flash drive
- B. Internal SATA hard drive 1
- C. Internal SATA hard drive 2
- D. Internal SATA hard drive 3

Quick Answer: [127](#)

Detailed Answer: [130](#)

17. Which of the following steps can be performed to optimize an infrared connection between a laptop and a printer? (Select the two best answers.)

- A. Shorten the distance.
- B. Install a repeater device.
- C. Boost the power.
- D. Maintain a clear line of sight.
- E. Change the transmission channel.

Quick Answer: [127](#)

Detailed Answer: [130](#)

18. One of your customers is having difficulty with two network connections in the accounting office. The accounting office is adjacent to the building's mechanical room. Network cables run from the accounting office, through the drop ceiling of the mechanical room, and into the server room next door. Which of the following solutions should be recommended to the customer?

- A. UTP
- B. Plenum-rated cable
- C. T568B
- D. Fiber optic

Quick Answer: [127](#)

Detailed Answer: [131](#)

19. John can't get any sound out of his laptop's speakers. Which of the

following factors could be the cause of this? (Select the two best answers.)

- A. The sound driver needs to be installed.
- B. The laptop is on battery power.
- C. He's using the wrong version of Windows Media Player.
- D. The volume is turned down.

Quick Answer: [127](#)

Detailed Answer: [131](#)

20. A customer reports that a computer is very loud and occasionally turns itself off. The computer is located under a desk directly on top of the carpet. Which of the following steps should be performed to remedy this situation? (Select the two best answers.)

- A. Remove the computer from the floor.
- B. Install a new hard drive.
- C. Replace the power cord.
- D. Wipe the computer down with a cloth.
- E. Clean the inside of the computer.

Quick Answer: [127](#)

Detailed Answer: [131](#)

21. Michelle's laptop powers on only when the AC adapter is connected to it. Which of the following is the most likely cause of this problem?

- A. Bad transformer
- B. Bad AC port on the laptop
- C. Bad battery
- D. Bad CMOS battery

Quick Answer: [127](#)

Detailed Answer: [131](#)

22. Which of the following commands produces the following output?

192.168.1.100 00-1C-C0-09-08-07

- A. Arp -a
- B. Ping
- C. Nbtstat -a

D. Arp

Quick Answer: [127](#)

Detailed Answer: [131](#)

23. Tony's printer is printing all blank pages. Which of the following is the most likely cause of this problem?

- A. No power to the transfer corona.
- B. Dirty primary corona.
- C. Toner cartridge needs to be replaced.
- D. Printer is not plugged into the USB port.

Quick Answer: [127](#)

Detailed Answer: [132](#)

24. Your company's network printer is no longer printing. All cables and settings are correct. You can ping the gateway but not the printer's IP. Which of the following is the most likely cause of this problem?

- A. The printer memory is full.
- B. The printer needs a new maintenance kit.
- C. The printer is not running in full duplex.
- D. The printer's network adapter is faulty.

Quick Answer: [127](#)

Detailed Answer: [132](#)

25. A user reports that a laser printer is printing poorly. You observe that the pages have wrinkles and random patterns of missing print. Which of the following is the most likely cause of this problem?

- A. The fuser needs to be replaced.
- B. The toner cartridge is defective.
- C. The corona wire is frayed.
- D. There is high humidity in the room.

Quick Answer: [127](#)

Detailed Answer: [132](#)

26. A user asks you to explain a message that comes up on the computer display before the operating system boots. The message states that the BIOS/UEFI logged a chassis intrusion. Which of the following

would be your explanation to the user?

- A. The optical drive tray is open.
- B. The CPU is loose.
- C. A malicious individual has hacked the system.
- D. The computer case has been opened.

Quick Answer: [127](#)

Detailed Answer: [132](#)

27. A school classroom is set up with removable drives to train students in Windows 8.1 and Windows 7. One student tells you that one of the computers will not boot up and receives an error: no operating system found. All of the cables are plugged in securely to the computer. Which of the following is the most likely cause of this problem?

- A. The monitor is not functioning.
- B. The removable drive is not locked.
- C. The lab network is down.
- D. The memory is not seated properly.

Quick Answer: [127](#)

Detailed Answer: [132](#)

28. You are experiencing intermittent connectivity to the website www.davidlprowse.com and want to check the status of the connectivity to that web server over a span of half an hour. Which of the following commands should be used?

- A. ping -t
- B. ipconfig /all
- C. nslookup
- D. ping -l

Quick Answer: [127](#)

Detailed Answer: [132](#)

29. Which of the following represents the most important aspect of using offline files on a networked computer?

- A. Size of the computer hard drive
- B. Availability of an optical drive on the computer
- C. Proximity of the computer to the server

- D. File server operating system

Quick Answer: [127](#)

Detailed Answer: [133](#)

30. Jim attempts to plug a scanner into the front USB port of a Windows computer, but the scanner does not power on. Which of the following solutions should be recommended to Jim?

- A. Use a different USB cable.
- B. Run Windows Update on the computer.
- C. Upgrade the computer's drivers.
- D. Use the onboard USB ports.

Quick Answer: [127](#)

Detailed Answer: [133](#)

31. One of your coworkers just installed a newer, more powerful video card in a customer's computer. The computer powers down before it completes the boot process. Before the installation, the computer worked normally. Which of the following is the most likely cause of this problem?

- A. The video card is not compatible with the CPU.
- B. The monitor cannot display the higher resolution of the new video card.
- C. The computer's RAM needs to be upgraded.
- D. The power supply is not providing enough wattage for the new video card.

Quick Answer: [127](#)

Detailed Answer: [133](#)

32. A customer states that an inkjet printer is printing streaks on documents. Which of the following steps should be performed to resolve this issue?

- A. Replace the printer data cable.
- B. Use the printer's clean option.
- C. Print a test page from the printer.
- D. Reinstall the drivers.

Quick Answer: [127](#)

Detailed Answer: [133](#)

33. You want your computer to boot off of the network and have the ability to be brought out of sleep mode over the network. Which two technologies should be implemented in the BIOS?

- A. WAP and WPA2
- B. WDS and Magic Packet
- C. PXE and WOL
- D. Symantec Ghost and Unattend.xml

Quick Answer: [127](#)

Detailed Answer: [133](#)

34. A customer brings in a laptop with a nonfunctioning LCD screen that always remains black; however, when you connect the laptop to an external monitor, the laptop boots to Windows normally. Which of the following steps should be performed first?

- A. Replace the inverter.
- B. Replace the LCD panel with a compatible model.
- C. Check the functionality of the LCD cutoff switch.
- D. Install a different video card.

Quick Answer: [127](#)

Detailed Answer: [134](#)

35. A customer tells you that a networked printer is not printing documents. You successfully ping the printer's IP address. Which of the following is the most likely cause of this problem? (Select the two best answers.)

- A. The printer is low on toner.
- B. The network cable is unplugged.
- C. The printer is out of paper.
- D. The gateway address on the printer is incorrect.
- E. The spooler is not functioning.

Quick Answer: [127](#)

Detailed Answer: [134](#)

36. Ray installs a new 802.11n wireless network adapter in a desktop computer. He tries to connect to an access point but doesn't see any access points in the wireless configuration manager. Which of the following is the most likely reason no access point is listed? (Select

the best answer.)

- A. The access points are out of range.
- B. No IEEE 802.11n access points are available.
- C. 802.11n is not supported on the network.
- D. The access points cannot accept any more connections.

Quick Answer: [127](#)

Detailed Answer: [134](#)

37. A customer has a home office. Which of the following technologies would benefit from the use of QoS?

- A. SSID
- B. Instant messaging
- C. Email
- D. VoIP

Quick Answer: [127](#)

Detailed Answer: [134](#)

38. A technician is setting up a SOHO network and has configured the wireless network adapter on a laptop with WPA2. While the technician configures the WAP, he notices that WPA2 is not listed as an option. Which of the following steps should be performed next?

- A. Install the latest WAP firmware.
- B. Install the latest wireless network adapter drivers.
- C. Install the latest WAP drivers.
- D. Install the latest wireless network adapter firmware.

Quick Answer: [127](#)

Detailed Answer: [134](#)

39. You plug in an external hard drive. A message appears in Windows that says the device can perform faster. Which of the following is the most likely cause to this message?

- A. The computer has USB 3.0 ports only.
- B. The external hard drive is using USB 2.0.
- C. The computer has USB 2.0 ports.
- D. The external hard drive is using FireWire.

Quick Answer: [127](#)

Detailed Answer: [135](#)

40. Your customer tells you that when trying to synchronize a smartphone via Bluetooth to Windows, a “no Bluetooth device” error message appears on the smartphone. The computer has a Bluetooth card installed. Which of the following is the most likely cause of this problem?

- A. The 802.11 card is disabled.
- B. A BIOS setting is incorrect.
- C. The hard drive is faulty.
- D. A microwave is interfering with the signal.

Quick Answer: [127](#)

Detailed Answer: [135](#)

41. Which of the following issues are potential reasons as to why a laptop’s keyboard stops functioning? (Select the three best answers.)

- A. Stuck keys
- B. Bad inverter
- C. Loose connection
- D. Faulty touchpad
- E. Warped keyboard
- F. Discharged battery

Quick Answer: [127](#)

Detailed Answer: [135](#)

42. Which of the following steps should be performed before removing a paper jam?

- A. Turn the printer off.
- B. Open all the doors in the printer.
- C. Clear the print queue.
- D. Take the printer offline.

Quick Answer: [127](#)

Detailed Answer: [135](#)

43. A PC’s monitor has no display after a power failure. The LED light on the monitor is on. Which of the following steps should be performed first?

- A. Power cycle the PC.
- B. Power cycle the peripherals.
- C. Power cycle the UPS.
- D. Power cycle the breaker switches.

Quick Answer: [127](#)

Detailed Answer: [135](#)

44. Which of the following should be checked when a laptop fails to turn on? (Select the four best answers.)

- A. Power LED
- B. Sound port
- C. AC adapter
- D. Inverter
- E. Hibernate mode
- F. Function key
- G. Power button

Quick Answer: [127](#)

Detailed Answer: [135](#)

45. A computer just had a memory upgrade installed. Upon booting the computer, it does not recognize the new memory, even though it is listed as being compatible on the manufacturer's website. Which of the following steps should be performed to resolve the issue?

- A. BIOS/UEFI update
- B. Adjust jumper settings
- C. OS Update
- D. New CMOS battery

Quick Answer: [127](#)

Detailed Answer: [136](#)

46. A customer states that the LCD display on a laptop has intermittent lines on the screen. You notice that when the display is moved, the lines appear and disappear again. Which of the following is the most likely cause of this problem?

- A. The display panel is defective.
- B. There's a damaged hinge.

- C. The video controller is defective.
- D. The display cable is loose.

Quick Answer: [127](#)

Detailed Answer: [136](#)

47. Dave reports that when a laptop's power button is pushed there is no response. Which of the following steps should be performed first?

- A. Replace the battery.
- B. Close the lid and reopen it.
- C. Plug in the external power supply.
- D. Reseat the memory.

Quick Answer: [127](#)

Detailed Answer: [136](#)

48. You are tasked with mapping a drive within the Command Prompt to a share named AlbaLonga on a server named Romulus. Which of the following is the correct syntax?

- A. net use //AlbaLonga/Romulus
- B. http://Romulus.com/AlbaLonga
- C. net use \\Romulus\AlbaLonga
- D. ipp://Romulus.com/AlbaLonga

Quick Answer: [127](#)

Detailed Answer: [136](#)

49. Memory was added to a workstation. When the computer was booted, it reports memory errors. Which of the following is the most likely cause of this problem?

- A. A different brand of memory was installed into bank two.
- B. The second memory stick was larger than the first.
- C. The second memory stick was smaller than the first.
- D. The new memory was installed in the second bank and runs at a lower speed than bank one.

Quick Answer: [127](#)

Detailed Answer: [136](#)

50. One of your department's computers is constantly overheating. The computer seems to work properly but isn't making any noise. Which

of the following is the most likely cause of this problem?

- A. The case fan stopped working.
- B. The power supply failed.
- C. The fanless heat sink failed.
- D. The CPU failed.

Quick Answer: [127](#)

Detailed Answer: [137](#)

51. A customer has installed a PostScript driver for a printer that actually only supports PCL. Which of the following is the most likely result?

- A. The printer will not print at all.
- B. The printer will print garbage or unreadable characters.
- C. The printer will process PostScript in the correct way.
- D. The printer will print at a decreased resolution (DPI).

Quick Answer: [127](#)

Detailed Answer: [137](#)

52. A marketing employee commonly sends large print jobs to a printer. The employee tells you that during the jobs the printer spontaneously pauses and resumes several times. Which of the following is the most likely cause of this problem?

- A. The toner cartridge is defective.
- B. The printer paper tray is not big enough.
- C. The printer needs updated drivers.
- D. The printer is overheating.

Quick Answer: [127](#)

Detailed Answer: [137](#)

53. Examine the following figure. Then answer the question that follows.

```
C:\>ping 10.254.254.1 -l 1500

Pinging 10.254.254.1 with 1500 bytes of data:
Reply from 10.254.254.1: bytes=1500 time<1ms TTL=64

Ping statistics for 10.254.254.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

What does the **-l** switch accomplish in the figure?

- A. It pings 10.254.254.1 1,500 times.
- B. It pings 10.254.254.1 continuously until stopped.
- C. It pings 10.254.254.1 with four 1,500-byte packets of data.
- D. It pings 10.254.254.1 at 1500 MB/s.

Quick Answer: [127](#)

Detailed Answer: [137](#)

54. A computer has a RAID 1 array. SATA Drive 0 failed, and now the computer will not boot. Which of the following steps would most likely fix the problem by allowing the computer to boot again?

- A. Replace SATA Drive 1.
- B. Mark SATA Drive 1 as active.
- C. Replace SATA Drive 0.
- D. Replace the array's controller.

Quick Answer: [127](#)

Detailed Answer: [137](#)

55. One of your customers reports to you that when typing on the laptop keyboard, the mouse pointer scrolls across the screen. Which of the following steps can resolve this?

- A. Reboot the laptop.

- B.** Plug in an external mouse.
- C.** Use an external monitor.
- D.** Disable the touchpad.

Quick Answer: [127](#)

Detailed Answer: [138](#)

- 56.** Examine the following figure. Then answer the question that follows.

Proto	Local Address	Foreign Address	State
TCP	10.254.254.205:54541	173.194.73.147:80	ESTABLISHED
TCP	10.254.254.205:54542	173.194.73.147:80	ESTABLISHED
TCP	10.254.254.205:54543	173.194.73.147:80	TIME_WAIT
TCP	10.254.254.205:54544	173.194.73.147:80	TIME_WAIT
TCP	10.254.254.205:54545	173.194.73.147:80	TIME_WAIT
TCP	10.254.254.205:54546	173.194.73.147:80	TIME_WAIT
TCP	10.254.254.205:54547	74.125.226.207:80	TIME_WAIT
TCP	10.254.254.205:54548	74.125.226.207:80	TIME_WAIT
TCP	10.254.254.205:54549	74.125.226.207:80	TIME_WAIT
TCP	10.254.254.205:54550	173.194.43.24:80	ESTABLISHED
TCP	10.254.254.205:54551	173.194.43.24:80	TIME_WAIT
TCP	10.254.254.205:54552	173.194.43.24:80	TIME_WAIT
TCP	10.254.254.205:54553	207.46.16.252:80	ESTABLISHED
TCP	10.254.254.205:54554	207.46.16.252:80	TIME_WAIT
TCP	10.254.254.205:54555	207.46.16.252:80	TIME_WAIT
TCP	10.254.254.205:54556	207.46.16.252:80	TIME_WAIT
TCP	10.254.254.205:54557	208.59.216.18:80	ESTABLISHED
TCP	10.254.254.205:54558	208.59.216.18:80	ESTABLISHED
TCP	10.254.254.205:54559	208.59.216.18:80	ESTABLISHED
TCP	10.254.254.205:54562	65.54.77.92:80	TIME_WAIT
TCP	10.254.254.205:54563	65.54.77.92:80	TIME_WAIT
TCP	10.254.254.205:54564	65.54.77.92:80	TIME_WAIT
TCP	10.254.254.205:54565	64.4.11.30:80	ESTABLISHED
TCP	10.254.254.205:54566	64.4.11.30:80	TIME_WAIT
TCP	10.254.254.205:54567	64.4.11.30:80	TIME_WAIT
TCP	10.254.254.205:54568	208.59.216.41:80	ESTABLISHED
TCP	10.254.254.205:54569	208.59.216.41:80	ESTABLISHED
TCP	10.254.254.205:54570	208.59.216.41:80	ESTABLISHED
TCP	10.254.254.205:54575	208.59.216.9:80	ESTABLISHED
TCP	10.254.254.205:54576	208.59.216.9:80	TIME_WAIT
TCP	10.254.254.205:54577	208.59.216.9:80	TIME_WAIT
TCP	10.254.254.205:54582	208.59.216.18:80	ESTABLISHED
TCP	10.254.254.205:54583	208.59.216.18:80	ESTABLISHED
TCP	10.254.254.205:54584	208.59.216.18:80	ESTABLISHED
TCP	10.254.254.205:54585	208.59.216.18:80	ESTABLISHED
TCP	10.254.254.205:54586	208.59.216.18:80	ESTABLISHED
TCP	10.254.254.205:54590	208.59.216.41:80	ESTABLISHED
TCP	10.254.254.205:54591	208.59.216.41:80	ESTABLISHED
TCP	10.254.254.205:54593	208.59.216.16:80	ESTABLISHED
TCP	10.254.254.205:54594	65.55.121.231:80	ESTABLISHED
TCP	10.254.254.205:54595	65.55.121.231:80	ESTABLISHED

Which of the following commands was issued in the figure?

- A.** netstat
- B.** netstat -n
- C.** nbtstat
- D.** nbtstat -n

Quick Answer: [127](#)

Detailed Answer: [138](#)

57. An office laser printer is printing lighter in random areas of each page. Which of the following is the easiest solution?

- A. Clean the fuser area.
- B. Clean the drum with a computer vacuum.
- C. Use compressed air on the pickup assembly.
- D. Replace the toner cartridge.

Quick Answer: [127](#)

Detailed Answer: [138](#)

58. Which of the following represents the most important reason not to plug an RJ11 phone line into an RJ45 port on a computer?

- A. PSTN networks are not Ethernet-based.
- B. Ethernet supports pulse dialing, not tone dialing.
- C. Phone line voltages can damage Ethernet equipment.
- D. RJ11 connections do not support full-duplex.

Quick Answer: [127](#)

Detailed Answer: [138](#)

59. A Windows computer using IP address 192.168.1.5 on the network serves the bulk of the data to the rest of the six computers within a HomeGroup. Suddenly, though, neither your computer nor any of the other systems can access that Windows computer. Which of the following commands should be used on your local computer to find out if the Server service is running on 192.168.1.5 and which ID number is the Server service?

- A. netstat -a and <00>
- B. nbtstat -a and <00>
- C. netstat -A and <20>
- D. nbtstat -A and <20>
- E. netstat -A and <03>
- F. nbtstat -A and <03>

Quick Answer: [127](#)

Detailed Answer: [139](#)

60. You are troubleshooting what you believe to be a power issue. Which of the following should be tested first?

- A. Power supply
- B. 24-pin power connector
- C. IEC cable
- D. AC outlet
- E. Circuit breaker

Quick Answer: [127](#)

Detailed Answer: [139](#)

61. No matter how many ipconfig/release and ipconfig/renew commands you issue, the computer you are troubleshooting can only obtain an APIPA address. Which of the following has most likely failed?

- A. DNS
- B. DHCP
- C. Network switch
- D. Patch panel

Quick Answer: [127](#)

Detailed Answer: [139](#)

62. A client is attempting to connect a laptop to a TV using an HDMI connector. The person tells you that video works fine, but audio does not. Which of the following is the most likely cause of this problem?

- A. The laptop needs an HDMI application installed.
- B. The HDMI cable is too long.
- C. The speakers are not compatible with the digital connection.
- D. The HDMI audio service has not been selected.

Quick Answer: [127](#)

Detailed Answer: [139](#)

63. You are tasked with accessing a wireless SOHO network. The SSID you require does not appear when you scan for wireless networks. Which of the following steps should be performed to access the wireless network?

- A. Enter the SSID manually.
- B. Change the SSID on the router.

- C. Change the MAC address on the router.
- D. Reset the wireless card.

Quick Answer: [127](#)

Detailed Answer: [139](#)

64. A customer tells you that the computer runs fine for a few minutes but then freezes. Which of the following is the most likely cause of this problem?

- A. The optical drive is faulty.
- B. Power supply failed.
- C. Fans are failing.
- D. Memory is not seated properly.

Quick Answer: [127](#)

Detailed Answer: [140](#)

65. You install a fiber-based backbone switch that connects three different departments' LAN switches. Which of the following network topologies did you just create? (Select the best, most specific answer.)

- A. Star
- B. Hybrid star
- C. Star-bus
- D. Hierarchical star

Quick Answer: [127](#)

Detailed Answer: [140](#)

66. A user states that the computer monitor is suddenly displaying garbled images and strange colors and leaving cursor trails. The technician determines that the system is using an onboard graphics controller. Which of the following is the most likely cause of the display problem?

- A. Resolution set too high
- B. Defective RAM
- C. Outdated firmware
- D. Defective power supply
- E. Fragmented hard drive

Quick Answer: [127](#)
Detailed Answer: [140](#)

67. A CAD/CAM workstation running AutoCAD is displaying rotating 3D images very slowly. The customer needs the images to rotate quickly and smoothly. Which of the following should be upgraded on the computer? (Select the best answer.)

- A. CPU
- B. RAM
- C. Video card
- D. Hard drive

Quick Answer: [127](#)
Detailed Answer: [140](#)

68. One of your customers reports that a laser printer is printing out blurry and smudged pages. Which of the following is the most likely cause of this problem?

- A. The fuser is not getting hot enough.
- B. The toner cartridge is leaking.
- C. The toner cartridge is low.
- D. The fuser is too hot.

Quick Answer: [127](#)
Detailed Answer: [140](#)

69. Which type of battery would you find in an iPad and how long will a full charge last for on the average?

- A. NiCd—2.5 hours
- B. Lithium—10 hours
- C. 16 V—5 hours
- D. Lithium-ion polymer—10 hours

Quick Answer: [127](#)
Detailed Answer: [140](#)

70. One of your customers reports that a computer has no access to the network. You look at the switch and notice that all lights are on and not flashing. The network cables are plugged in, and the computer's network card is functioning properly. Which of the following steps should be performed to solve this problem?

- A. Ping 127.0.0.1.
- B. Replace the switch's uplink cable.
- C. Reboot the computer.
- D. Power cycle the switch.

Quick Answer: [127](#)

Detailed Answer: [141](#)

71. You need to list all the network shares for a local computer within the Command Prompt. Which of the following commands should be run?

- A. Net view
- B. Net use
- C. Net share
- D. Net statistics

Quick Answer: [127](#)

Detailed Answer: [141](#)

72. You are now a manager of a technical services team. One of your technicians notices that a printer is jamming just above the printer tray. Which of the following steps should first be performed by the technician to resolve the issue?

- A. Clean the feeder rollers.
- B. Clean the pickup rollers.
- C. Replace the fuser.
- D. Replace the drum.

Quick Answer: [127](#)

Detailed Answer: [141](#)

73. You need to find out which ports are open in the Windows Firewall on a Windows computer. Which of the following commands allows you to show the open ports in a reliable way?

- A. arp -a
- B. netstat -an
- C. netsh firewall show state
- D. ipconfig /all

Quick Answer: [127](#)

Detailed Answer: [141](#)

74. A laptop's LCD is being scratched by the keyboard when the lid is closed. Which of the following steps should be performed to remedy this issue?

- A.** Replace the rubber bumpers.
- B.** Replace the LCD hinges.
- C.** Replace the LCD panel.
- D.** Replace the keyboard.

Quick Answer: [127](#)

Detailed Answer: [141](#)

75. A customer cannot access some Internet websites but can connect to resources inside the LAN. You can use the PING command to test the user's connectivity. Which of the following commands should be run next to troubleshoot this issue?

- A.** net use
- B.** netstat -r
- C.** nbtstat -R
- D.** ipconfig/flushdns

Quick Answer: [127](#)

Detailed Answer: [141](#)

76. You receive a message when attempting to boot an operating system that warns you of a memory-read error. Which of the following steps should be performed to remedy this issue?

- A.** Reseat or replace RAM modules.
- B.** Change the memory settings in the BIOS.
- C.** Replace the hard drive.
- D.** Remove any USB flash drives.

Quick Answer: [127](#)

Detailed Answer: [142](#)

77. You configured a customer's router to automatically assign only 5 IP addresses in an attempt to make the network more secure. Now you notice that the wireless printer is intermittently losing connections when there are multiple users on the wireless network. Which of the following steps represents the best solution?

- A. Increasing the wireless router IP lease times
- B. Installing another access point
- C. Configuring the printer to use a static IP address
- D. Configuring the printer for DHCP

Quick Answer: [127](#)

Detailed Answer: [142](#)

78. You want to utilize the NET command to tell you how many Server Message Block (SMB) packets were received by the workstation service. Which of the following NET commands should be run?

- A. View
- B. Statistics
- C. Stop
- D. Use

Quick Answer: [127](#)

Detailed Answer: [142](#)

79. Which of the following steps can be performed to ensure that all external traffic to your website is directed through a firewall to the right computer?

- A. Configure port forwarding.
- B. List in the exceptions the IP address of the local website.
- C. Configure NAT.
- D. Configure all interior traffic appropriately.

Quick Answer: [127](#)

Detailed Answer: [142](#)

80. You are troubleshooting an Internet connectivity issue. Several laptop users cannot connect to any websites. Users with PCs do not have any trouble. Which of the following devices is most likely causing the problem?

- A. Router
- B. Cable modem
- C. WAP
- D. Encryption mismatch
- E. Firewall

F. UTM

Quick Answer: [127](#)

Detailed Answer: [143](#)

Quick-Check Answer Key

[1.](#) B

[2.](#) C, D

[3.](#) B

[4.](#) A

[5.](#) C

[6.](#) D

[7.](#) C

[8.](#) B, D

[9.](#) A, B, E, G

[10.](#) C, E

[11.](#) C

[12.](#) A, D

[13.](#) C

[14.](#) A

[15.](#) A, C, E

[16.](#) D

[17.](#) A, D

[18.](#) D

[19.](#) A, D

[20.](#) A, E

[21.](#) C

[22.](#) A

[23.](#) A

[24.](#) D

[25.](#) A

[26.](#) D

[27.](#) B

[28.](#) A

- 29. A
- 30. D
- 31. D
- 32. B
- 33. C
- 34. C
- 35. C, E
- 36. A
- 37. D
- 38. A
- 39. C
- 40. B
- 41. A, C, E
- 42. A
- 43. A
- 44. A, C, E, G
- 45. A
- 46. D
- 47. C
- 48. C
- 49. D
- 50. A
- 51. B
- 52. D
- 53. C
- 54. B
- 55. D
- 56. B
- 57. D
- 58. C
- 59. D
- 60. C
- 61. B

[62.](#) D

[63.](#) A

[64.](#) C

[65.](#) D

[66.](#) B

[67.](#) C

[68.](#) A

[69.](#) D

[70.](#) D

[71.](#) A

[72.](#) B

[73.](#) B

[74.](#) A

[75.](#) D

[76.](#) A

[77.](#) C

[78.](#) B

[79.](#) A

[80.](#) C

Answers and Explanations

1. Answer: B. The laptop is probably connecting to a different wireless network, either in the home next door or an adjacent business—one without encryption, it would seem. Based on the speed—54 Mbps—you could safely assume that the connection being made is to either an 802.11g or 802.11a network. The best course of action is to verify the SSID name of the 802.11ac router, forget the current wireless network, and connect to the new network. You might find that in some cases a laptop connects at a slower speed (such as 802.11g), even though faster speeds (such as 802.11n and 802.11ac) are available. This could be due to the configuration of the WAP or the wireless adapter on the laptop. That's not one of the listed answers and is not the case here because of the poor signal strength mentioned in the scenario.

The cable modem isn't a part of the equation in this scenario. We are

only interested in connecting to the wireless network to start. A router (wireless access point) won't have a wireless card such as the ones in a PC or laptop. Also, we don't know if the device is faulty yet because the laptop never connected to it. The same goes for the wireless antennas.

- 2. Answer: C and D.** RAID 1 (mirroring) provides fault tolerance by copying information to two drives. RAID 5 (striping with parity) provides fault tolerance by keeping a compressed copy of the data (in the form of parity) on each of the disks other than where the original data is stored. RAID 0 is striping only, and a spanned volume is one that stores data on two or more drives, but as whole files, not as stripes of data.
- 3. Answer: B.** Use the `tracert` command in Windows (`traceroute` in Linux-based systems). This identifies all the routers along the way between you and the final destination. If one has failed, the trace either stops working or displays asterisks instead of ping times. A similar option to this is the command `pathping`. Ping by itself only tests the final destination; it doesn't show anything in-between. `ipconfig` displays the configurations for each network adapter. The net command has many uses—for example, `net stop spooler`, which stops the Print Spooler service.
- 4. Answer: A.** Try not to turn off the printer unless absolutely necessary. Instead, clear the printer spooler. You would do this by stopping the Print Spooler service in Computer Management (or in the Command Prompt by entering `net stop spooler`) and then deleting the files in the path `C:\Windows\System32\Spool\Printers`.
- 5. Answer: C.** `ipconfig /all` gives the most information about the network connection. Many networking issues can be analyzed and troubleshooted from this command. `ipconfig /release` and `ipconfig /renew` are for releasing and renewing DHCP addresses. `ipconfig /flushdns` purges the DNS resolver cache.
- 6. Answer: D.** Pinging the loopback address should return results even if you are not physically connected to the network. It deals with the computer internally and doesn't even need a LAN. You can ping the local computer with the commands `ping loopback` and `ping localhost`; however, the best option is to ping the actual loopback

IP address by typing ping 127.0.0.1 (or ping ::1 for IPv6). This removes any possible name resolution that might try to occur in Windows. Pinging the loopback address doesn't make use of the network, so the LAN, DHCP servers, and the Ethernet cable do not play into the scenario.

7. Answer: C. A personal area network (PAN) is a network of small computers, smartphones, and other similar devices. Using Wi-Fi or Bluetooth is very common when creating a cable-free type of PAN known as a wireless PAN or WPAN. Ad-hoc means that there is no wireless access point controlling the network. A local area network (LAN) is a network that is inhabited by PCs, laptops, and mobile devices; everything connects to a central connecting device such as a switch (or a SOHO router). A wide area network (WAN) connects two or more LANs over a large geographic area. A metropolitan area network (MAN) connects two or more LANs in a smaller geographic area—for example, two buildings.

8. Answers: B and D. Check if you are within range; the range of Bluetooth devices is limited—for example, Class 2 devices are limited to 10 meters. Also try power cycling the Bluetooth program by turning Bluetooth off and on. In addition to those correct answers, you can try charging the device, restarting the device, working with a known good Bluetooth device, attempting to forget the device, and reconnecting it.

9. Answers: A, B, E, and G. If the computer is receiving power, everything is hooked up properly, and there is no display, then you need to consider the big four: motherboard, CPU, video card, and RAM. These are the four components of the computer that could cause a no-display issue. The most common is the video card; check if that is seated properly into the expansion slot. You should also check if that card works in one of your test systems. Then check if the RAM and then the CPU are properly installed and compatible. Finally, check the motherboard, if necessary. Of course, at the beginning of this process, you should inquire with the customer as to when this computer failed and if anything was modified on the system of late. This might help you troubleshoot the problem. You would question the user during step 1 of the CompTIA A+ troubleshooting process: Identify the problem. As for the incorrect answers: The hard drive won't even be accessed if the system's RAM, motherboard, or CPU fails because the system won't even

POST. There will be little to no activity on the hard drive LED. Now, if the video card failed, the system might still boot, but without video, and you would see some hard drive LED activity. However, some systems will not boot; lack of video will cause the system to stop at POST. The DVD-ROM drive won't cause a no-display issue because it is a secondary device. The power supply is not the cause of the problem in this case. The scenario said that the computer was receiving power. If the power supply fails, nothing would happen when you press the computer's power-on button. If the SATA data cable is disconnected (and that was the only problem), you would get video; the system would POST (and most likely record a hard drive error); and then when the system attempted to boot to the hard drive, you would get a "missing OS" error or a similar message.

10. Answers: C and E. If only one computer is connected to the switch, there shouldn't be much activity. Rapidly blinking LED lights might lead you to believe that the computer's network card (NIC) or the port on the switch is faulty. However, it could be that the person is sending a lot of data to himself while you are testing the network, but that would be strange and rare. The server doesn't have anything to do with this, nor does the hard drive.

11. Answer: C. What should have been port 143 was probably configured incorrectly if the person can send but not receive email. The Internet Message Access Protocol (IMAP) receives email and uses port 143. The Simple Mail Transfer Protocol (SMTP) uses port 25 by default to send mail but will use port 443 if SSL or TLS security is implemented. Port 110 is the POP3 email port. POP3 also is used to receive email, but not in this question's scenario. By the way, another port that is used for SMTP is 587. This is done to avoid being blocked by ISPs and to reduce spam. Mobile devices such as Android phones can be a little more difficult to configure email on, as compared to PCs. Be sure to work with mobile devices and go through the steps of setting up email on both Android and iOS.

12. Answers: A and D. Check the basics first! Make sure the power cable wasn't disconnected from the computer, and verify that the voltage switch is in the correct position. Kids like to play tricks on lab computers! A standard power strip should not overload with just two computers connected to it, but if it does, press the reset switch on the power strip. The monitor being unplugged could be a separate problem, but it won't cause the computer to not power on. If the

second computer works fine, then that tells you the power strip is plugged in.

13. Answer: C. Start with the physical! Check for a link light first. This tells you whether there is physical connectivity. Then, if necessary, you can, in order, test the patch cable, reconfigure TCP/IP, install drivers (from the manufacturer's website, mind you), and, finally, replace the NIC.

14. Answer: A. The TV tuner is used to enable the Live TV option in Windows Media Center. This is usually the toughest part to configure on an HTPC. This is due to cable company regulations. However, TV tuners are also becoming more popular when used with over-the-air signals including HD, as long as you are within close proximity to a metropolitan area. A modem is used to make dial-up connections to the Internet. Video cards display video signal to a monitor or TV; often, HTPCs will have a video card with an HDMI output. The network adapter (also known as a network card or NIC) is used to connect to the LAN.

15. Answers: A, C, and E. First make sure that the iPad has a connection to the Internet. Then check that the email settings, including port numbers, server names, username/password, and any security settings, were entered properly. Bluetooth can be off while email is being used. GPS tracks where a mobile device is located, and it too can be turned off when accessing email.

16. Answer: D. Use Internal SATA hard drive 3 for the page file. By separating the page file from the operating system and the user profiles, you maximize performance of the system. If the page file was on either of the other SATA drives, the constant accessing of the page file would slow down the OS performance or would slow down the access of user files. SATA hard drive 3 is a better option than the external USB flash drive for a variety of reasons: it is probably faster; it has less latency; and in general, internal drives perform more efficiently than external drives.

17. Answers: A and D. You should try shortening the distance between the laptop and the printer and make sure that the infrared (IR) ports on each device can see each other. IR can be difficult to work with due to the short range and need for line of sight. This is why Bluetooth or other wireless methods are usually preferred. Repeaters are used in networking as a method of extending a wired or wireless LAN. Most IR devices' power cannot be boosted. Some IR devices'

transmission frequency can be changed, but it will be less likely that you will change the channel or boost the power.

18. Answer: D. Of the listed answers, you should recommend fiber optic cables. Another option would be shielded twisted pair (STP). Furthermore, you could rerun the cables through a metal conduit or reroute the cables around the mechanical room. Chances are, in this scenario, the mechanical room's contents are causing interference on the network cables. Electromagnetic interference (EMI) can be prevented with STP or fiber optic cables. UTP is unshielded twisted pair, and because it is the most common it is probably what the customer is using currently. Plenum-rated cable is used in areas where sprinklers cannot get to. It has a coating that makes it burn much more slowly. T568B is the most common network cabling wiring standard.

19. Answers: A and D. Many laptops have a nearly hidden volume knob; you have to search for it. Proper sound drivers are needed to drive the sound in the system. Though Windows will attempt to install a Microsoft driver, you should get the sound driver from the manufacturer's website. Windows Media Player is built in to Windows. It plays most types of music and sounds without an update. If Windows Media Player doesn't recognize a file format, it will ask you to update the program. Whether the laptop is on battery power does not affect the speakers by default.

20. Answers: A and E. First, remove the computer from the floor. Second, take the computer outside and clean it by removing the biggest dust bunnies (which you will undoubtedly find), and use compressed air and a vacuum. That should fix the problem of noise; there was probably a lot of dust and dirt in one or more of the fans. A clogged CPU fan can also cause the CPU to overheat, resulting in the computer turning itself off. A new hard drive isn't necessary unless you find that it is malfunctioning. The power cord most likely isn't the problem here, but you could always swap it with another one to be sure. Wiping down the outside of a computer with a cloth won't do much to fix the situation, and you wouldn't wipe down the inside of the computer. On a slightly different topic, static electricity could be generated when a person touches the power button of the computer. Combine this with the computer lying on a carpet, and it could cause the computer to short out and shut down. So, it's best to keep the computer off of the floor for a variety of reasons.

21. Answer: C. If the laptop gets power when plugged in but won't work when disconnected from AC power, the battery must be dead or defective. A bad transformer means that the AC adapter would need to be replaced. That and a bad AC port would cause the laptop to fail when plugged into the AC adapter, but it should work fine on battery power (until the battery fully discharges, that is). A bad CMOS battery causes the time, date, and passwords to be reset in the BIOS.

22. Answer: A. The Address Resolution Protocol (ARP) command allows you to see which computers your IP address and corresponding MAC address have connected to recently. It displays these computers formatted as IP, and MAC address. Arp -a does exactly this. Those connections listed are considered to be "dynamic" because they are temporary. In this scenario, only one computer connected to the local system recently, but the command could show more. The command also enables you to create a permanent or static connection to another system via MAC address and corresponding IP address. ping tests a connection to another computer's IP address. Nbtstat -a, along with a computer name or IP address, shows the NetBIOS name table for the local machine or for a remote computer. It displays core services running on a computer such as the workstation and server services. Arp by itself shows the help file for the command.

23. Answer: A. If the transfer corona wire is not getting power, the paper will not get the positive voltage needed to attract the toner and the pages will come out of the printer with nothing on them. If the primary corona wire is dirty, you might see lines or smearing in the text. This could indicate that the toner cartridge needs to be replaced. If the printer is not plugged into the USB port, it shouldn't output any pages because the print job will never reach the printer. A message should display in the operating system concerning this as well.

24. Answer: D. The network adapter must be faulty if everything else checks out. Be careful not to confuse duplex printing (printing on both sides of the paper) with full-duplex networking (transmission of data in both directions simultaneously). If the printer's memory was full, it could cause the printer to stop printing, but the scenario tells us that you can't ping the printer's IP address, which is a telling sign. It's possible that a printer could need a new maintenance kit, but it

would stop printing only if something failed, at which point the printer needs more than maintenance—it needs repair.

25. Answer: A. The wrinkled pages are the number one indicator that the fuser needs to be replaced. Random patterns of missing print further indicate that the fuser is not working properly. If you note that toner is not being fused to the paper, then that is the last clue. The fuser usually needs to be replaced every 200,000 pages or so on a laser printer. If the toner cartridge was defective, either you would get blank printouts or there would be lines or smears, but there wouldn't be any page wrinkles. If the transfer corona wire is defective, it might result in blank paper. Damage to the primary corona wire can also result in black lines or smearing. High humidity could cause the separation pads or rollers to fail.

26. Answer: D. A chassis intrusion means that the computer case has been opened. Some BIOS/UEFI programs have the capability to detect this. This is a security feature that informs the user of a possible breach. As a PC technician, you should check the computer inside and out for any possible tampering. The BIOS program will not detect if the optical drive is open. If the CPU was loose, the computer would not boot and there would be nothing to display. It is possible that a malicious individual has hacked, or attempted to hack, the system. However, this is not necessarily the case, although you should check just to make sure.

27. Answer: B. The most likely reason the computer won't boot and presents the no-OS error is that the removable drive is not locked. Removable drives are common in schools and labs. A frame is installed to a 5 1/4" bay and connected to the motherboard via SATA the way a hard drive normally would be. Then, swappable trays are inserted into the frame, each with a different hard drive and a different OS. When the drive tray is inserted into the frame, it must be locked; it is common to forget to lock one or two. If it isn't locked, the data port will not connect properly and the OS will not boot. If you get a message on the screen, then you know the monitor is working. No operating system or missing OS messages happen before the computer can connect to the network, so have no fear—the lab network is probably not down. If the memory needed to be reseated, you would get a message in the POST or a series of beeps.

28. Answer: A. `ping -t` is a continuous ping. It pings the web server with Internet Control Message Protocol (ICMP) echo packets until

you manually stop the operation. You can stop the operation by pressing Ctrl+C on the keyboard. When you do so, an average of the ping results is displayed, as well as the total number of packets that were sent, received, and lost. `ipconfig /all` displays the configuration of your network adapter. `nslookup` enables you to find out a domain's corresponding IP address, as well as to carry out other name server configurations. `ping -l` is a four-packet ping, but the `-l` parameter enables you to modify the size of the packet being sent.

29. Answer: A. The most important factor is the size of the hard drive. This is because the offline files are stored locally. Optical drives are not necessary for offline files to be used. Though the computer is on the network, the network doesn't really play into the offline files on the local computer. Yes, the computer will synchronize files and needs to have proper access to the network and the file server when it does so. But when using offline files, it is all done locally. So the proximity to the server and the type of OS on the file server isn't as important. As long as the client computer can use offline files (for example Windows 8.1 or Windows 7), it should be able to sync them up with any Windows Server.

30. Answer: D. Tell the customer to use the onboard ports. This means the ports that are integrated directly to the motherboard on the back of the computer. It is a quick, temporary fix, but it should work because they are hardwired to the board. The front USB plugs are part of the computer case; they probably were never connected to the motherboard properly. Now, you should also check if the USB scanner needs to be plugged into an AC outlet. If the back USB ports don't work, then you could try a different USB cable. Software shouldn't affect the USB device getting power. If it has a proper USB connection, it should power up. But, after that, if Windows doesn't recognize it, try updating drivers and Windows.

31. Answer: D. Today's video cards can be very powerful and might require a more powerful power supply than is in the computer currently. Video cards need to be compatible with the motherboard, not necessarily with the CPU. If the monitor could not display the higher resolution, the operating system would still boot but you would probably see garbled information on the screen. Because a video card comes with its own RAM, the computer's RAM usually does not need to be upgraded.

32. Answer: B. Use the printer's built-in clean option. This might be accessible from the display on the printer or from within the printer's software in the operating system. Cleaning the cartridges is necessary every once in a while so they don't get clogged. If the clean option doesn't work, you can try physically removing the cartridge, sparingly using a solution of 50 percent water/50 percent isopropyl alcohol, and cleaning the cartridge nozzle with a cotton swab. Streaks on documents are not caused by faulty data cables or bad drivers. A faulty data cable would probably cause complete print failure; bad drivers would cause the printer to print garbled text. Printing a test page will result in the same document streaks.

33. Answer: C. PXE and WOL. To configure the BIOS to boot off of the network, you have to enable the Preboot Execution Environment (PXE) network adapter. To allow the computer to be brought out of sleep mode by another system on the network, you need to configure Wake-on-LAN (WOL) in the BIOS. WAP stands for wireless access point; WPA2 is the Wi-Fi Protected Access version 2 encryption used on a WAP. WDS stands for Windows Deployment Services and is used on Windows Server to deploy installations of Windows to remote computers. A Magic Packet is a special packet sent to a computer to wake it up, but it is configured in Windows. Symantec Ghost is used to create or install images of operating systems. Unattend.xml is the answer file created for unattended installations of Windows over the network.

34. Answer: C. Check the functionality of the LCD cutoff switch first before opening the laptop and replacing parts. If the laptop is equipped with one, the LCD cutoff switch turns off the monitor when the laptop is closed; because it is a mechanical device it is prone to failure. Another possibility is that the flex cable that makes the connection between the display and the circuit board is loose—these are usually underneath the keyboard.

Although the LCD panel and inverter could possibly fail, it is less common, and because they require a lot of time and effort to replace, they should be checked afterwards. Generally, a laptop's video card is the least common component to fail, although it can be replaced on some laptops.

35. Answers: C and E. The printer could simply be out of paper. Or, the spooler could be malfunctioning. If the printer is out of paper, fill all trays and suggest that the user check the trays every couple days

or so. If the spooler is not functioning, you should restart the spooler service in the Services console window or in the Command Prompt with the `net stop spooler` and `net start spooler` commands. If the printer was low on toner, you would get weak print or completely blank pages. If the network cable was unplugged, you wouldn't be able to ping the printer. Printers don't always use gateway addresses, but if this one did, it wouldn't affect your ability to connect to it (as long as it was on the LAN). The gateway address is used so that the printer can communicate with computers beyond the LAN.

36. Answer: A. Most likely, the access points are out of range. 802.11n indoor range is approximately 70 meters (230 ft.), and outdoor range is approximately 250 meters (820 ft.). If Ray is outside this range, the computer will not be able to see any access points in the wireless configuration manager. Remember also that obstructions such as walls will reduce the maximum range. It is unlikely that no 802.11n access points are available. If Ray installed an 802.11n wireless network adapter, then he must know that there is an 802.11n WAP around. Possibly none exist, but that's a remote possibility. Even if 802.11n wasn't supported, an 802.11n network adapter can downgrade to 802.11g or even 802.11b, so it should still be able to connect. Regardless, he should still be able to see other slower wireless access points in the wireless configuration manager. Finally, if there were access points, but they couldn't accept any more connections, he would again at least see them in the wireless configuration manager program. That answer doesn't explain why he can't see them.

37. Answer: D. Voice over IP (VoIP) is a streaming telephony application. Streaming applications such as VoIP and online games can benefit from QoS. QoS stands for Quality of Service, which is the capability to provide different priorities to different applications. It guarantees network bandwidth for real-time streaming of the media applications such as VoIP. The SSID is the name or identifier of a wireless network. Instant messaging and e-mail are not streaming applications; therefore, they would not benefit from the use of QoS.

38. Answer: A. The technician should install the latest firmware to the WAP. WAPs don't require drivers; the firmware has all the code they require. On the other hand, wireless network adapters don't

need firmware (usually) because they use drivers. But the network adapter is fine because it is already configured with WPA2. It's the WAP we are concerned with; we want it to use the best wireless encryption possible.

39. Answer: C. This message appears when a device is connected to a USB port; Windows notifies you that the device can run faster than it currently is. It's possible that the external hard drive is compatible with USB 3.0, but the system is not capable of USB 3.0 speeds (5.0 Gbps) whatsoever. Or perhaps the device was connected to a USB 2.0 port (black in color) but the system also has USB 3.0 ports available (blue in color) but were all in use. In some cases, Windows can't run at higher speeds without a driver update or other upgrade software-wise.

If the external hard drive was a USB 2.0 device, the message wouldn't appear because everything already runs at USB 2.0 speed. If the drive was FireWire (IEEE 1394), USB wouldn't even be a concern; they are completely different standards and ports. An external drive plugged into a FireWire port wouldn't get the message listed in the question.

40. Answer: B. Chances are, a computer BIOS setting is incorrect. The card either is not being recognized in the BIOS or is not enabled. Of course, it is also possible that the card has an incorrect driver installed in Windows. 802.11 refers to WLAN (Wi-Fi), not Bluetooth. Disabling the WLAN card does not affect this scenario. If the hard drive was faulty, you would see other indications such as lockups or failure to boot, but nothing dealing with Bluetooth devices. Microwaves are usually not located near a person's computer. Though it is possible for a microwave or other wireless device to interfere with Bluetooth, it is the less likely answer.

41. Answers: A, C, and E. A keyboard could stop functioning due to stuck keys from overuse or a liquid spill; a loose ribbon cable connection; or a warped keyboard caused by damage from heavy items, environmental conditions, or misuse. A bad inverter would cause the backlight to fail, and you would just barely be able to see the display. A faulty touchpad is another problem altogether; the touchpad and the keyboard are separate devices on the laptop. A discharged battery would cause the laptop to simply shut off (if using battery power only).

42. Answer: A. You should always turn the printer off and unplug it

before putting your hands inside it! Plus, you should wait for about 10 or 15 minutes so that the fuser can cool off (if clearing a paper jam from a laser printer). Open the doors after you have turned the printer off. The print queue will be cleared on most printers when you turn them off. Taking the printer offline is not enough; it needs to be shut down to be safe.

43. Answer: A. If there is a power failure, try power cycling the PC. In this scenario it could be that power went out for five minutes. When power returned, the monitor was still on (thus the LED) but the computer remained off (thus nothing on the display). Really, in this case, you are just turning the computer on. Peripherals should have no bearing on this scenario unless they also plug in. If you power cycle the PC and there is still nothing on the display, try disconnecting the peripherals from the PC, disconnecting the AC power (if the PC has that), and rebooting the PC. If the monitor has a LED light, you know it is getting power and so the UPS does not need to be power cycled. However, if there was a five-minute power loss and the UPS didn't keep the PC running, you should check the UPS battery. Turning the breaker switches for the circuit on and off is always fun but would simply cut power to the AC outlets temporarily.

44. Answers: A, C, E, and G. Check the power LED on the laptop first and see what it is doing. It could be that the user simply wasn't pressing the power button! If it blinks slowly once in a while the laptop might be in a sleep state. Then check the power light on the AC adapter. Make sure the AC adapter is getting power; if it is, check if it is the right adapter. Check if the system is in hibernate mode by pressing and holding the power button. Finally, the power button might be faulty, so make sure it isn't loose. If there is no AC adapter available, you should also check if the battery is connected properly and charged. Make sure the user keeps the AC adapter on hand at all times.

45. Answer: A. You should update the BIOS/UEFI. If it hasn't been updated in a while, it probably won't recognize newer memory modules. Most of today's motherboards don't have jumper settings for RAM. In fact, the only jumper you often find is the BIOS configuration jumper, which only needs to be configured if a person forgot a password. The BIOS will have a problem recognizing the RAM far before the OS starts up; no OS updates are required to

make RAM recognizable to the system. If the computer needed a new CMOS battery, you would know because the time in the BIOS would reset to an earlier date.

46. Answer: D. Intermittent lines are a good indicator that the video cable is loose (or possibly damaged). Remove the keyboard (or disassemble the display), locate the ribbon cable, and connect it securely on each end. This is common with laptops as they are constantly being moved around and jostled; ribbon cables like to come loose! Remember to consider loose connections before guessing at defective parts. A defective display or defective video controller would probably cause a complete lack of video. A damaged hinge would prevent the laptop from closing properly.

47. Answer: C. You should plug in the external power supply. You know that Dave—sometimes he forgets to plug in the power adapter and then the battery goes dead, causing the laptop to be quite unresponsive when pressing the power button. Remember the golden rule: Make sure it's plugged in! Do that first and save yourself a lot of hours of your life. However, if that doesn't work, you can move on to checking the battery, checking the type of power adapter being used, the AC outlet you are connecting to, and so on. Some users neglect to charge their batteries, and instead, their laptops are constantly being used at a low percentage of charge. This lessens the lifespan of the battery. So, when you do plug in the AC adapter, sometimes you will find the battery does need to be replaced. Always check to see if it can be charged and if it holds a charge. Recommend to laptop users that they carry a spare battery in the laptop bag. You shouldn't have to reseat the memory unless you get an error message during the POST.

48. Answer: C. The correct syntax is net use \\Romulus\AlbaLonga. Note the backslashes in use here. You would probably want a persistent connection using a drive letter (such as F:), so you might append that to net use (for example, net use F: \\Romulus\AlbaLonga or something to that effect). The universal naming convention (UNC) for mapping drives is \\servername\sharename. The server name is Romulus; the share name is AlbaLonga. It's possible to connect to servers and shares with HTTP but not map a drive to them. Also, the server name is Romulus. Romulus.com is a domain name, something that a server name would be part of—for example, server1 would be the server

name (or hostname) of the address server1.davidlprowse.com. The IPP protocol is used to make connections to printers and is often used with IP addresses, not server names.

49. Answer: D. For multiple memory sticks to be compatible, they need to run at the same speed. You might be able to get away with one stick being one step slower, if the motherboard supports it, and as long as it is not dual-channel memory. But it isn't worth the chance. If the sticks are not compatible, or if the second stick is not compatible with the motherboard, you will probably get memory errors during POST.

50. Answer: A. The case fan is the most likely culprit of the listed answers. If the computer is overheating, it means that the hot air is not exhausting out of the case—the number one offender is the case fan. And if the system is making no noise, you can guess that a fan has failed (although they are making quieter and quieter fans). This is a quick and cheap fix luckily. However, the power supply fan could have failed (less likely), in which case you would have to replace the entire power supply. Fanless heat sinks in of themselves are passive and usually don't fail; it is more likely that the CPU fan (the active portion of a CPU cooling system) would fail (if the system has one that is). If the CPU itself failed, it could be because of overheating, but that would cause the system to stop working, which is contrary to the scenario in the question.

51. Answer: B. Most likely, the printer will print garbage or unreadable characters (known as *garbled* characters). If you install an incorrect driver for a printer, you risk a garbage printout. You would know if this was the case immediately when trying to print a test page. The incorrect driver could be a printer driver for another printer or one that is PostScript when it should be Printer Command Language (PCL). This won't stop the printer from printing, but you may not like what you see (unless you are into gibberish). The dots per inch (DPI) of the printer will not change. A DPI such as 600 cannot be decreased to 300 DPI unless you set that in the printer's Properties sheet in Windows or on the display on the printer. And it can only be increased in the same manner, and only if the printer supports it.

52. Answer: D. The printer is probably overheating during these long jobs. Perhaps the fuser is nearing replacement time. The fuser can run as hot as 400° Fahrenheit (204° Celsius), and some printers will pause printing when that temperature threshold is tripped. After the

temperature goes back below the threshold, the printer will begin printing again. If the toner cartridge was defective, you would get blank paper, lighter printing, or paper with lines or smears. As long as there is paper in the tray, the large print job will continue to print (if within operating temperature parameters). Updated drivers are only necessary when the printer will not print the data on the page correctly. Pausing the job in this scenario is not causing any print errors; it's just taking longer to complete.

- 53. Answer: C.** The `-l` switch in this scenario is pinging the host at 10.254.254.1 with four individual 1500-byte packets of data. `-l` allows you to change the size of the packet that is sent; it is 32 bytes by default. You can see that the figure only shows four pings total. A continuous ping would keep going until you stop it by pressing `Ctrl + C` on the keyboard or closing the Command Prompt; that would be performed with the `-t` switch. A specific amount of pings can be controlled with the `-n` switch. It is 1500 bytes per packet, not 1500 MB/s, which would be a far greater amount, one that cannot be configured with the `ping` command.
- 54. Answer: B.** You would mark SATA Drive 1 as active. If you cannot access Disk Management, you would have to do it by booting the system with WinRE (System Recovery Options), accessing the Command Prompt; executing the `Diskpart` command; and typing the commands `select disk 1`, `select partition 1`, and `active`. A RAID 1 array is a mirroring array with two drives. The second drive keeps an exact copy of the first drive in real-time. If Drive 1 doesn't take over automatically when Drive 0 fails, you will have to set it to active. Remember that a partition with an operating system must be set to active; otherwise, the computer will not be able to boot to the partition. Replacing Drive 1 is not necessary as it did not fail. Replacing Drive 0 is inevitable if you want to re-create the mirror, but not necessary if you just want to get the system to boot for now. Replacing the array's controller is most likely not necessary. You should try replacing the drive first. It is possible (though unlikely) that the drive and the controller failed at the same time, but always start with the most likely culprit (and never change out more than one device at a time).
- 55. Answer: D.** The person's arm or sleeve is probably brushing up against the touchpad, causing the mouse pointer to move. By disabling the touchpad in the Device Manager or elsewhere, you

eliminate the chance of that, but the user also loses that functionality. Rebooting the laptop has the same effect and is not necessary. Using an external mouse alone does not fix the problem; even if there is an external mouse; the touchpad can still be used, unless it is disabled. An external monitor does not help you fix the touchpad issue, but it can be a nice addition to a laptop. In fact, many users who have laptops in an office also use them at home. At the office, and perhaps at home as well, it is best to set them up with a docking station, external keyboard, external mouse, and monitor. It usually results in greater productivity.

56. Answer: B. The `netstat -n` command was issued in the Command Prompt in the figure. `-n` shows information in numerical format: IP addresses and port numbers instead of computer names and protocol names. `netstat` by itself would show the same information but by name. Note that the command in the figure only shows TCP sessions. To show both TCP and UDP sessions, use `netstat -a`. To show both but in numerical format, use `netstat -an`. `nbtstat` displays TCP/IP statistics as they relate to NetBIOS over TCP/IP connections. `nbtstat -n` lists local NetBIOS names.

57. Answer: D. If the printer is printing lighter in some areas, it is a good indicator that the toner cartridge needs replacement. The fuser need only be cleaned if you see smudges or streaks (you should also check the maintenance schedule and see if it should be replaced). You might clean parts of the printer with a computer vacuum if there was a toner spill (making sure to turn off the printer first), but the drum might be within the toner cartridge, making that impossible. Compressed air is also sometimes used on rollers and separator pads, but it is not usually recommended because it can blow excess toner all over the place—have that computer vacuum handy.

58. Answer: C. Phone lines can carry as much as 80 volts (when they ring), which could possibly damage network interface cards on a computer and other Ethernet networking equipment, so they should be plugged into modems only. Ethernet often uses ± 5 V signals unless you use Power over Ethernet (PoE), which incorporates regular Ethernet but also sends power over the unused wires on the network cable. It is true that the Public Switched Telephone Network (PSTN) is not Ethernet-based, but that only means that a phone line will not work with a standard Ethernet network adapter. Ethernet

doesn't support pulse dialing or tone dialing. RJ11 connections are indeed full-duplex; you can talk and listen when having a conversation at the same time. Although the landline can be considered old-fashioned (and by some even deprecated) you will still find it in many homes and small businesses.

59. Answer: D. Use the `nbtstat -A` command. This allows you to check the name table of the remote computer by connecting to it with an IP address. `-a` connects by computer name (though an IP address can still work if proper resolution methods are available on your network). Note that the options for `nbtstat` are case-sensitive. `<20>` is the number associated with the server service, the service that allows the Windows computer (IP address 192.168.1.5) to serve data to other systems on the network. If it was functioning, you would see it listed along with the Workstation service `<00>` and perhaps the Messenger service `<03>`. However, if the server service was not running, you wouldn't even be able to connect to the Windows computer at all—not with `nbtstat`, by ping, or any other method, until the problem is repaired. *That one might be considered a “doozie.”*

60. Answer: C. Check the IEC cable first if you sense that there is a power issue. That is the power cable for the computer; make sure it is connected to the computer and to the AC outlet. Next, check the AC wall outlet. Use a receptacle tester or your trusty multimeter to make sure the AC outlet is wired properly and supplying the correct voltage. If that is fine, you can check the power supply and the 24-pin power connector. Only check the circuit breaker if the power has been cut to an area of the building, and only if you have access to the electrical panels.

61. Answer: B. If the computer keeps obtaining an APIPA address (an IP address that starts with 169.254), then the DHCP server has most likely failed. Of course, you should check if the computer's patch cable is connected and that the network adapter has a link light. If so, then you can rule out the network switch and the patch panel. DNS resolves hostnames to IP address and isn't part of DHCP.

62. Answer: D. On the laptop, enable the HDMI audio service to send audio signal along the HDMI cable to the TV. On DVRs, HDMI is set to transmit video and audio by default. However, on some laptops, the audio software might be set to HDMI video only by default, expecting you to be doing presentations or other things

where audio is not required. You can usually change this by right-clicking the sound icon in the Notification Area, selecting Playback Devices, and then selecting the HDMI sound device. Drivers might also be necessary. There is no maximum specified length of an HDMI cable, and the question does not tell us the length, but standard cables are either 5 meters or 15 meters long. If the laptop has an HDMI output, you should be able to modify it in Windows. If the HDMI output is part of a USB device, PC Card, or ExpressCard, make sure you have installed the latest drivers for the device. The speakers don't come into play here. If the TV with the HDMI output has speakers, those speakers should work.

63. Answer: A. If you can't find the SSID by scanning for it, enter it manually in your wireless configuration software. You will also need to know the channel being used and the type of encryption as well as the key. If you were to change the SSID on the router, the rest of the clients wouldn't be able to connect, and you still wouldn't be able to scan for it because SSID broadcasting has obviously been turned off as a security precaution in the question's scenario. MAC addresses are burned into the network adapter of the router; they are usually not modified. Resetting the wireless card is rather vague. You could disable it and reenable it, but you would be left with the same problem. *Know how to manually enter a wireless configuration in Windows!*

64. Answer: C. Most likely a fan is failing somewhere—either the CPU fan or a case fan—causing the computer to overheat and then ironically to “freeze,” as the customer put it. What the customer meant is that the computer locked up. The CD-ROM won't cause the system to lock up, but the *CD-ROM* driver could cause a stop error if it failed. If the power supply failed, the system would turn off; it wouldn't lock up. If the memory was not seated properly, the system would probably not get past the POST and you would either hear beep codes or see an onscreen message to that effect.

65. Answer: D. You just created a hierarchical star topology. By taking three current star topologies and connecting them all to a backbone switch, you add a top level of super speed. The backbone switch is at the top of the *hierarchy*. Star-bus is when two star networks' switches are connected with a single bus connection. Both hierarchical star and star-bus are hybrid topologies.

66. Answer: B. Defective RAM is the most likely perpetrator in this

case. The key in the question is the shared video memory. That means that the video controller relies on the motherboard's RAM memory modules. First, try cleaning and reseating the RAM, and if that doesn't work, make sure they are compatible with the motherboard and with each other (if there is more than one). Then replace the RAM as a last resort. If they fail, video will fail. If the resolution was set too high, the screen would be completely unreadable; you probably wouldn't even see the cursor.

67. Answer: C. The video card should be your first stop on the upgrade express train. Images that do not display properly are usually due to a subpar video card. CAD/CAM workstations require a powerful video card. The CPU will also play into this, especially when rendering images, so that is the second thing you should check. View the Windows Experience Index (Windows 7/Vista), or WinSAT (Windows 8 and higher) details to find out what has the lowest score and go from there. (You could also use third-party analysis tools.) The video card is most likely the lowest. CAD/CAM workstations often require video cards that can cost thousands of dollars. Always read the directions carefully and set up massive ESD prevention techniques prior to installing a card this expensive. RAM is not as important to the CAD/CAM workstation, as long as it has enough to run Windows and the AutoCAD software. The hard drive doesn't play much of a factor while the CAD software is running.

68. Answer: A. Blurry and smudged pages tend to indicate that the fuser is not getting hot enough. The fuser lasts for about 200,000 pages of print before it needs to be replaced: a good time to install a maintenance kit. If the toner cartridge was leaking, you might see a lot of toner within the printer that needs to be cleaned properly with a computer vacuum. If the toner cartridge is low, the print would become weaker. If the fuser was too hot, it could cause the paper to become singed and could be a safety hazard. In any case when you need to maintenance the fuser, turn off the printer, unplug it, let it cool, and then replace the fuser.

69. Answer: D. iPads and other mobile devices use the lithium-ion polymer battery for its lasting power and its flexibility during manufacturing. It is a step above a standard lithium-ion in that it uses a flexible material that can be shaped into just about anything the manufacturer wants. On the average, it lasts for 10 hours of use. Nickel-cadmium (NiCd) batteries were used in laptops during the

1990s and early millennium, but they have all given way to lithium-ion. The iPad uses a 3.7-volt battery. A 16-volt battery would be ridiculous and inefficient, not to mention a real challenge to fit in the device.

70. Answer: D. Remember to start with the simple. For PCs, that means check the connections; for networks, that means power cycling the device (and checking connections). If the lights are on and not blinking, it would appear that the switch crashed and needs that reboot! A ping of 127.0.0.1 was probably already done in this scenario. That's how you know the network card appears to be functioning properly. Nothing has been mentioned about the Internet (or other networks), so there is no reason to think that the switch's uplink cable needs replacement. Rebooting the computer should not be necessary because we again determined that the network card is functioning properly.

71. Answer: A. The `net view` command lists all of the shares on the computer within the Command Prompt. `net use` enables you to map network drives to remote shares. `net share` allows you to create shares within the Command Prompt. `net statistics` displays information about the server or workstation services.

72. Answer: B. The technician should clean the pickup rollers. If they are dirty or oily, they could cause a paper jam directly behind or above the paper tray. The feeder rollers would cause a jam further in the printer. A fuser issue would cause a jam up toward the end of the printing path. The drum (or toner cartridge) will usually not cause a paper jam, but in the rare case, simply replace the toner cartridge.

73. Answer: B. `netstat -an` is the best answer. This shows ports on the inbound side (local address) and the outbound side (foreign address). It also shows which ports are in established (meaning open), listening, time-wait, or close-wait status. The `-an` portion of the command is a combination of options that 1) displays TCP and UDP ports (`-a`) and 2) allows the results to be displayed in numeric fashion (`-n`).

`netsh firewall show state` is a command that can be run in the Command Prompt that displays currently open ports, but it may not be detailed enough for today's systems. That is one of the reasons it is deprecated (the `netsh firewall` command's successor is `netsh advfirewall firewall`). `arp-a` shows

a table of hosts that the local computer has connected to in recent history; it displays the IP address and MAC address of those remote computers. `ipconfig /all` displays the configuration of your network adapters.

74. Answer: A. You should replace the rubber bumpers. These can wear down over time or might become unstuck from the laptop. These bumpers create a space between the keyboard and the LCD; without them, the LCD can get scratched by the keyboard. If the laptop opens and closes okay, then there is no reason to replace the hinges, because they won't change how the screen is touching the keyboard. The LCD panel is only scratched; it hasn't failed as of yet, so it doesn't need to be replaced. The keyboard is most likely not the cause of the problem. There is the uncommon possibility that the keyboard is not mounted properly; a quick sideways glance at the laptop keyboard surface can tell you right away. You would have to remove the laptop bezel and reconnect the keyboard properly if this is the case. However, it is more likely that the rubber bumpers fell off or became worn down.

75. Answer: D. You should run an `ipconfig/flushdns`. This removes entries from the local computer's DNS cache that has the domain name to IP address mappings. If customers can access *some* websites, you know they have connectivity to the Internet; however, it could be that the DNS cache is corrupted, or that the HOSTS file has been compromised, causing certain websites to become inaccessible.

`Net use` enables you to map network drives in the command-line. `netstat -r` displays the local computer's routing table. `nbtstat -R` (note the capital "R") purges and reloads the remote cache name table.

76. Answer: A. Windows might give memory read errors when RAM cannot be read from properly. If it is definitely a RAM error and not an OS issue; the best thing to try is to reseat and/or replace the RAM. While you're there, you can try using compressed air on the RAM and the RAM slots to remove any dust that has accumulated over time. Other similar errors in Windows such as The Memory Could Not Be Read could be caused by an issue with the OS reading from the hard drive and may require an update. Generally, if the BIOS memory settings are not correct, the system will not boot and will give memory errors during POST. Because this is an issue related

directly to RAM, you do not want to replace the hard drive. Most likely, a USB flash drive will not give a memory error; regardless, simply removing the USB flash drive will not fix the problem.

77. Answer: C. If the wireless printer is losing connections when there are multiple users on the network, then it is probably because there aren't enough automatically assigned IP addresses to go around. You should configure the printer to use a static IP address, instead of receiving one dynamically from the router. This address will be permanent and should fix the problem. Often, companies insist that printers (as well as routers, switches, and servers) always get a static address to avoid problems of this sort. Increasing the IP lease times might work; it might not. When multiple users attempt to get on the wireless network, someone is going to lose out; it might be a person at a laptop, or it might be the printer or other device, so this is not a permanent solution. Another access point might increase your wireless coverage, but it will do nothing for your IP issue. The whole problem here was that the printer was configured for DHCP; it was obtaining its IP address automatically from the DHCP server within the router. By changing it to static, it doesn't have to compete for the five dynamically assigned IPs.

78. Answer: B. The `NET statistics` command (or, more accurately, the `net statistics workstation` command) shows bytes received, SMBs sent and received, network errors, and lots more. `Net view` shows the other computers on the local area network. `Net stop` is used to stop a service such as the print spooler. `Net use` allows a person to view network drives or mapping new ones.

79. Answer: A. In this scenario, your organization is running a web server on the LAN. Your job is to make sure that all clients outside your network on the Internet that are attempting to access the web server can do so. You must configure port forwarding for this to work. The HTTP requests, and/or whatever port the clients use to access the web server (perhaps 80, but not necessarily), should be forwarded to the IP address and port of the web server on your network. Exceptions are meant to allow certain computers access in or out of the firewall, but this would give the external clients too much access. You want to streamline this so that the external traffic is all directed to your web server, and port forwarding is the best way to do this. NAT stands for Network Address Translation and is used

to match up the private IP address numbers of your internal computers to the external public IPs they attempt to connect to; it protects the private IP identity of the internal computers. However, it's actually not the interior traffic you are concerned with. Instead, you are concerned with the external traffic trying to get in to your network and visit your web server, and the web server *only*.

80. Answer: C. The wireless access point (WAP) is most likely the problem. Perhaps it was turned off or disabled or lost its connection to the network. This WAP failure causes the laptops to fail when attempting to connect to websites, and furthermore the laptops won't have any Internet connection whatsoever. There are a lot of possibilities for why a client computer cannot connect to a WAP, but if there are several wireless clients that cannot make the connection, you can usually assume that the problem is not at the client side, and instead is at the central connecting device, in this case the WAP. Laptops often connect wirelessly because they are mobile devices, whereas PCs often connect in a wired fashion because they are stationary, and don't necessarily need a wireless connection. If the PCs can connect to the Internet fine (as the question states), then you can probably rule out the router, cable modem, firewall and UTM device. That is unless of course one of the devices was configured with some kind of rule stating that the laptops can't connect to websites. This is unlikely, but is a possibility if the network has a firewall or UTM. UTM stands for unified threat management; UTM devices combine the functionality of firewalls, intrusion detection systems (IDS), and proxy servers, among other things. An encryption mismatch is always possible when it comes to wireless connections. Perhaps the WAP is configured for WPA2 and AES, but a laptop was configured with WPA or TKIP, or both. That mismatch would cause the laptop to fail to connect to the wireless network, and ultimately, the Internet. However, for *several* laptops to fail due to encryption mismatches, they would all have to be configured improperly, which again is unlikely, and at which point someone would be held accountable for the mistake—don't let this happen to you. Verify your configurations after you have made them; always test! Testing and troubleshooting are huge parts of the real IT world and the A+ exams, be sure you study them and practice them intensely.

Chapter Six. Review of the 220-901 Exam

Phew! That was a lot of questions. But if you are reading this, you survived. Great work!

Now that you have completed the four practice exams, let's do a little review of the 220-901 domains, talk about your next steps, and give you some test-taking tips.

Review of the Domains

Remember that the 220-901 is divided into four domains, as shown in [Table 6.1](#).

Domain	Percentage of Exam
1.0 Hardware	34
2.0 Networking	21
3.0 Mobile Devices	17
4.0 Hardware & Network Troubleshooting	28
Total	100

TABLE 6.1 220-901 Domains

Hardware and troubleshooting have the majority of questions on the exam, but the networking and mobile device sections are just about as important. Remember to practice all of the domains and objectives in a hands-on manner while you study the theory behind the concepts.

Many technicians are great with PC hardware, mobile devices, and networking. But if a tech is weak in the troubleshooting area, the final exam score could be in jeopardy. Study all the concepts in each of the domains. Pay strict attention to troubleshooting concepts, this is where many techs are lacking in knowledge and experience!

Everyone who takes the exam gets a different group of questions. Because it is randomized, one person may see more questions on, say, printers than the next person. Or one person might see more questions on laptops. It differs from person to person. To reduce your risk, be ready for any question from any domain, and study all of the objectives.

In general, this exam deals with installation, configuration, and troubleshooting methods, and it is hardware-based for the most part. The

bulk of the software side of things is reserved for the 220-902 exam, as is security.

Review What You Know

At this point, you should be pretty well versed when it comes to the 220-901 exam. But I still recommend going back through all of the questions and making sure there are no questions, answers, concepts, or explanations you are unclear about. If there are, then additional study is probably necessary. If something really just doesn't make sense, is ambiguous or vague, or doesn't appear to be technically correct, feel free to contact me at my website (www.davidlprowse.com), and I will do my best to clarify.

Here are a couple great ways to study further:

- ▶ **Take the exams in flash card mode**—Use a piece of paper to cover up the potential answers as you take the exams. This helps to make you think a bit harder and aids in committing everything to memory. There are also free flash card applications that you can download to your computer to help you organize your studies.
- ▶ **Download the A+ 220-901 objectives**—You can get these from <http://certification.comptia.org/> or from my website (www.davidlprowse.com). Go through them one-by-one and checkmark each item that you are confident in. If there are any items in the objectives that you are unsure about, study them hard. That's where the test will trip you up. There are approximately 25 pages of objectives, so this will take a while. But it really helps to close any gaps in your knowledge and gives that extra boost for the exam.
- ▶ **Take the CompTIA A+ sample practice exam**—This can also be found at www.comptia.org. Re-take that exam until you get 100 percent correct. If any questions give you difficulty, contact me at my website so that I can help you understand them.
- ▶ **Study the 220-902 questions, and then return to the 220-901 practice exams**—This might sound a bit crazy, but I have found that if an A+ candidate has a strong grasp of *all* A+ topics, he or she is more likely to pass either one of the exams. My recommendation is for you to go through the 220-902 practice exams, then return to the 220-901 exams for a review, and then go take the actual CompTIA A+ 220-901 exam. It's a big extra step, but it has proven very effective with my students and readers.

More Test-Taking Tips

There are two types of questions on the CompTIA A+ exams—multiple choice and performance-based. The majority of these are multiple choice questions where you are asked to select one or more correct answers to a question. The performance-based questions are scenario-oriented questions that test your knowledge by asking you to click on items, click and drag, or navigate through a system, and type commands. This is why knowing the theory is not enough—you have to actually prove your technical ability in a hands-on way.

The majority of multiple choice questions have four multiple-choice answers, but some have more. These answers are usually connected within the same concept. For example, a question about video connectors might provide four answers—DVI, HDMI, DisplayPort, and VGA—all of which are video ports. But some of the questions are not as synergistic; they might have a group of answers that seem at odds with each other. For example, a question about computer networking protocols might provide four answers: DHCP, DNS, Cat 6, and T568B. While DHCP and DNS are protocols within the TCP/IP suite, Cat 6 and T568B are cabling standards. Likewise, a question might ask about hard drive technologies and list SATA, magnetic disk, DVD-ROM, and solid-state. While SATA and magnetic disk are definitely hard drive technologies, DVD-ROM is not and solid-state is a type of long-term memory storage that *might* be used as a hard drive technology. This will be true on the real exam as well.

Regardless of the type of question, there is often one answer that is just totally wrong. Learn to identify it; once you have, you will automatically improve to at least a 33% chance of getting the answer right, even if you have to guess.

No single question is more important than another. Approach each question with the same dedication, even if you are not interested in the topic or don't like how the question is worded. Remember that the CompTIA exams are designed and double-checked by an entire panel of experts.

When you take the exam, remember to slowly read through the questions and each of the answers. Don't rush it. Let's list some more smart methods you can use when presented with difficult questions:

- ▶ Use the process of elimination.
- ▶ Be logical in the face of adversity.
- ▶ Use your gut instinct.

- ▶ Don't let one question beat you!
- ▶ If all else fails, guess.

I'll expand on these points in the final chapter. If you finish the exam early, use the time allotted to you to review all of your answers. Chances are you will have time left over at the end, so use it wisely. Make sure that everything you have marked has a proper answer that makes sense to you. But try not to overthink! Give it your best shot and be confident in your answers.

Taking the Real Exam

Do not register until you are fully prepared. When you are ready, schedule the exam to commence within a day or two so that you won't forget what you learned! Registration can be done online. Register at Pearson Vue (www.pearsonvue.com). They accept payment by major credit card for the exam fee. First-timers will need to create an account with Pearson Vue.

Here are some good general practices for taking the real exams:

- ▶ Pick a good time for the exam
- ▶ Don't over-study the day before the exam
- ▶ Get a good night's rest
- ▶ Eat a decent breakfast
- ▶ Show up early
- ▶ Bring earplugs
- ▶ Brainstorm before starting the exam
- ▶ Take small breaks while taking the exam
- ▶ Be confident

I'll embellish on these concepts in the final chapter.

Well, that's about it for the 220-901 portion of this book. Good luck on your exam!

Chapter Seven. Introduction to the 220-902 Exam

The CompTIA A+ 220-902 exam covers operating systems such as Windows, OS X, and Linux, computer and network security, mobile device operating systems such as Android and iOS, software troubleshooting, and operational procedures. The largest percentage of the exam focuses on the installation, configuration, and troubleshooting of Windows, but you will also see many questions on the other topics as well. In this chapter, I briefly discuss how the exam is categorized, give you some test-taking tips, and then prepare you to take the four 220-902 practice exams that follow.

Exam Breakdown

The CompTIA A+ 220-902 exam is divided by domain. Each domain makes up a certain percentage of the test. The five domains of the A+ 220-902 exam and their respective percentages are listed in [Table 7.1](#).

Domain	Percentage of Exam
1.0 Windows Operating Systems	29
2.0 Other Operating Systems & Technologies	12
3.0 Security	22
4.0 Software Troubleshooting	24
5.0 Operational Procedures	13
Total	100

TABLE 7.1 220-902 Domains

Chances are, when you take the real CompTIA exam, the questions will be based on these percentages. But you never know. The questions are chosen at random, so you have to be prepared for anything, and study all of the objectives. But as with the 220-901 exam, troubleshooting plays a huge role. Remember: Without good troubleshooting skills and experience, you have very diminished hopes of passing the exam.

Each domain has several or more objectives. There are far too many to list in this book, but I do recommend you download a copy of the objectives for yourself. You can get them from CompTIA's A+ webpage or from my

website: www.davidlprowse.com.

Let's talk about each domain briefly.

Domain 1.0: Windows Operating Systems (29%)

We've hardly talked about Windows up until this point. But now that we're here, you'll see lots of questions on Windows—I guarantee it. Domain 1.0 deals with Windows 8 and 8.1, Windows 7, and Windows Vista, in all their forms and versions.

Note

Windows XP and older versions of Windows have been virtually eliminated from the exam because Microsoft does not support them anymore. However, you may get a question here or there concerning how newer versions of Windows interface with legacy Windows XP technologies, for example the Power Users group, XP Mode, and dual-boots.

It covers how the operating systems can be installed, how they are configured, and how they are utilized. You should understand how to: configure Windows networking technologies such as HomeGroup, create shares, map network drives, and work with firewalls. This domain also covers how to maintain the computer, user accounts and groups, permissions, and virtualization. In addition, it gets into commands such as tasklist, shutdown, and Robocopy, which are issued in the Command Prompt. Then there's maintenance and backup of Windows; and this is not a finite list. The objectives are in-depth. It's a lot of information to cram into one domain, but remember that this domain does not cover Windows troubleshooting—that is left for Domain 4.0.

Domain 2.0: Other Operating Systems & Technologies (12%)

Windows dominates the PC industry, but it isn't the only player in the game, and especially does not dominate the mobile device industry. This domain covers iOS, Android, OS X, and Linux. It also details cloud technologies, virtualization, and types of servers.

Although it is only listed as 12 percent of the exam, it is still quite important. Mobile computing and cloud technologies are growing at a very fast rate, and if your organization doesn't use them now, it probably will

soon.

Domain 3.0: Security (22%)

Security takes on a bigger role every year in the IT world. The CompTIA A+ 220-902 exam reflects this. This domain deals with common security threats, physical and digital prevention methods, how to secure the various operating systems listed in the first two domains, how to dispose of hard drives properly, and how to secure a small office/home office (SOHO) network. Basically, nowadays careful consideration for security should be applied to anything technology-oriented.

This domain and the troubleshooting domain are where many test-takers have the most difficulty. Be ready.

Domain 4.0 Software Troubleshooting (24%)

Here it is: troubleshooting. It's the troubleshooting methodologies that make the ultimate computer tech. And it's those skills that will make you or break you on this exam. Whenever you encounter a technical problem, try to approach it in a logical manner. The best way to do this is to use some kind of troubleshooting theory.

CompTIA has its own six-step troubleshooting process that you should know. I'd like you to try to incorporate this six-step process into your line of thinking as you read through the practice exams, and whenever you troubleshoot a PC, mobile device, or networking issue:

Step 1: Identify the problem.

Step 2: Establish a theory of probable cause. (Question the obvious.)

Step 3: Test the theory to determine cause.

Step 4: Establish a plan of action to resolve the problem and implement the solution.

Step 5: Verify full system functionality and, if applicable, implement preventative measures.

Step 6: Document findings, actions, and outcomes.

Note

This troubleshooting process is actually listed within the Domain 5.0 objectives.

This could be considered the most difficult section and, unfortunately in the IT field, the most insidious. Issues can look or act like one thing, yet be another. Stay really focused when dealing with troubleshooting questions. You'll know them when you see them—they include real-world scenarios and often end in a phrase such as "what should you do to fix the problem," or "how can this be resolved," and so on.

Master this domain, and you will be well on your way to passing the A+ 220-902 exam, attaining your A+ certificate, and becoming a true expert at troubleshooting.

Domain 5.0: Operational Procedures (13%)

The fifth domain of the 220-902 exam deals with safety procedures, environmental concerns, incident response, prohibited content, communication, professionalism, and the CompTIA A+ troubleshooting theory. These are the "intangibles" of the A+ exam, and while the domain is only 13 percent of the exam, they could be considered some of the most important topics for the real-world—especially professionalism. This last domain helps to develop the well-rounded technician. Apply the concepts in this domain to everything else you do.

Test-Taking Tips

Just like with the 220-901 practice exams, I recommend you take it slow. Carefully read through each question. Read through *all* of the answers. Look at each answer and think to yourself whether it is right or wrong. And if it is wrong, define why it is wrong. This will help you to eliminate wrong answers in the search for the correct answer. When you have selected an answer, be confident in your decision.

Be ready for longer questions. This is due to the complexity of some of the scenarios. You will need to imagine yourself within the situation and think how you would approach the problem step-by-step. Be prepared to write things down as you look at the question. This can help you to organize your thoughts. It's allowed on the real exam as well.

Note

In fact, the testing center is required to give you something to write on. Be sure that you receive it before you start your exam.

Finally, don't get stuck on any one question. You can always mark it and return to it later. I'll have more tips as we progress through the book, and I summarize all test-taking tips at the end of this book.

Getting Ready for the Practice Tests

The following four chapters have practice tests based on the 220-902 exam. Each exam is followed by in-depth explanations. Be sure to read them carefully. Don't move on to another exam until you have mastered the first one by scoring 90 percent or higher. Be positive that you understand the concepts before moving on to another exam. This will make you an efficient test-taker and allow you to benefit the most from this book.

Consider timing yourself. Give yourself 90 minutes to complete each exam. Write down your answers on a piece of paper. When you are finished, if there is still time left, review your answers for accuracy.

Each exam gets progressively more difficult. Don't get overconfident if you do well on the first exam because your skills will be tested more thoroughly as you progress. And don't get too concerned if you don't score 90 percent on the first try. That just means you need to study more and try the test again later. Keep studying and practicing!

After each exam is an answer key, followed by the in-depth answers/explanations. Don't skip the explanations, even if you think you know the concept. I often add my two cents, which can add insight to the nature of the question, as well as help you to answer other similar questions correctly.

Ready yourself: prepare the mind, and then go ahead and begin the first 220-902 exam!

Chapter Eight. 220-902 Practice Exam A

Welcome to the first 220-902 practice exam. This is the easiest of the 220-902 exams. The subsequent exams will get progressively harder.

Take this first exam slowly. The goal is to make sure you understand all of the concepts before moving on to the next test.

Write down your answers and check them against the Quick-Check Answer Key, which immediately follows the exam. After the answer key you will find the explanations for all of the answers. Good luck!

Practice Questions

1. Which of the following are Microsoft operating systems? (Select all correct answers.)

- A. Windows 8.1
- B. iOS
- C. Vista
- D. Android
- E. Linux
- F. Windows 7

Quick Answer: [172](#)

Detailed Answer: [173](#)

2. Of the following, which is *not* a method of installing Windows 7 or higher?

- A. Over the network
- B. CD-ROM
- C. DVD-ROM
- D. USB flash drive
- E. Image

Quick Answer: [172](#)

Detailed Answer: [173](#)

3. Which of the following is the default file system used by Windows?

- A. FAT32
- B. CDFS

C. NTFS

D. FAT

Quick Answer: [172](#)

Detailed Answer: [173](#)

4. Where is the Notification Area located in Windows?

A. In the System Properties dialog box

B. In the System32 folder

C. On the taskbar

D. Within the Start menu

Quick Answer: [172](#)

Detailed Answer: [173](#)

5. Which of the following statements best describes a Windows service pack?

A. Windows service packs are a new version of the operating system.

B. Windows service packs are Resource Kit utilities.

C. Windows service packs are compilations of software updates and patches.

D. Windows service packs are driver updates.

Quick Answer: [172](#)

Detailed Answer: [173](#)

6. Which of the following is the minimum amount of RAM needed to install Windows Vista?

A. 128 MB

B. 256 MB

C. 512 MB

D. 1 GB

Quick Answer: [172](#)

Detailed Answer: [173](#)

7. Which of the following is the minimum amount of RAM needed to install Windows 7 or 8? (Select the two best answers.)

A. 256 MB

B. 512 MB

C. 1 GB

D. 2 GB

Quick Answer: [172](#)

Detailed Answer: [173](#)

8. In Windows, an MMC is blank by default. Which of the following should be added to the MMC to populate it with programs?

A. Applets

B. Files

C. Directories

D. Snap-ins

Quick Answer: [172](#)

Detailed Answer: [174](#)

9. Which of the following files is the boot loader in Windows?

A. Winload.exe

B. BCD

C. Setup.exe

D. Ntoskrnl.exe

Quick Answer: [172](#)

Detailed Answer: [174](#)

10. Which of the following tools enables you to create a partition in Windows?

A. Disk Administrator

B. Disk Management

C. Computer Management

D. Disk Cleanup

Quick Answer: [172](#)

Detailed Answer: [174](#)

11. Which type of partition should an operating system be installed to?

A. Primary

B. Extended

C. Volume

D. Logical drive

Quick Answer: [172](#)
Detailed Answer: [174](#)

12. Which of the following tools enables you to find out how much memory a particular application is using?

- A. Msconfig
- B. Task Manager
- C. Chkdsk
- D. System Information

Quick Answer: [172](#)
Detailed Answer: [174](#)

13. Which of the following features is used to both start and stop services? (Select the two best answers.)

- A. Computer Management
- B. Task Manager
- C. Performance Monitor
- D. MMC
- E. Msconfig

Quick Answer: [172](#)
Detailed Answer: [174](#)

14. Where is the Windows Update feature located in Windows 7?

- A. Start > All Programs > Accessories
- B. Start > All Programs
- C. Start > All Programs > Control Panel
- D. Start > All Programs > Administrative Tools

Quick Answer: [172](#)
Detailed Answer: [175](#)

15. Which of the following user account permissions are needed to install device drivers on Windows?

- A. Standard user
- B. Guest
- C. Administrator
- D. Power users

Quick Answer: [172](#)

Detailed Answer: [175](#)

16. Which of the following commands creates a new directory in the Windows Command Prompt?

- A.** CD
- B.** MD
- C.** RD
- D.** SD

Quick Answer: [172](#)

Detailed Answer: [175](#)

17. Which of the following commands is entered at the Command Prompt to learn more about the `dir` command? (Select the two best answers.)

- A.** `dir help`
- B.** `help dir`
- C.** `dir /?`
- D.** `dir ?`

Quick Answer: [172](#)

Detailed Answer: [175](#)

18. Which interface is used to launch the `ipconfig` command?

- A.** Command Prompt
- B.** Control Panel
- C.** MMC
- D.** Task Manager

Quick Answer: [172](#)

Detailed Answer: [175](#)

19. A customer's computer is using FAT32. Which file system can you upgrade it to when using the `convert` command?

- A.** NTFS
- B.** ext4
- C.** exFAT
- D.** NFS

Quick Answer: [172](#)

Detailed Answer: [175](#)

20. Which of the following can be used to keep hard drives free of errors and ensure that Windows runs efficiently? (Select the two best answers.)

- A.** Disk Management
- B.** Disk Defragmenter
- C.** Check Disk
- D.** System Restore
- E.** Task Scheduler

Quick Answer: [172](#)

Detailed Answer: [175](#)

21. What is Windows recovery environment known as? (Select the two best answers.)

- A.** WinRE
- B.** Recovery Console
- C.** Advanced Boot Options
- D.** System Recovery Options

Quick Answer: [172](#)

Detailed Answer: [175](#)

22. Which log file contains information about Windows setup errors?

- A.** setupact.log
- B.** setuperr.log
- C.** unattend.xml
- D.** setuplog.txt

Quick Answer: [172](#)

Detailed Answer: [176](#)

23. Which of the following represents the RAM limitation of Windows 8 Pro?

- A.** 32 GB
- B.** 64 GB
- C.** 192 GB
- D.** 512 GB

Quick Answer: [172](#)

Detailed Answer: [176](#)

24. A customer's Device Manager shows an arrow pointing down over one of the devices. What does this tell you?

- A.** The device's driver has not been installed.
- B.** The device is not recognized.
- C.** The device is disabled.
- D.** The device is in queue to be deleted.

Quick Answer: [172](#)

Detailed Answer: [176](#)

25. Which of the following is *not* an advantage of NTFS over FAT32?

- A.** NTFS supports file encryption.
- B.** NTFS supports larger file sizes.
- C.** NTFS supports larger volumes.
- D.** NTFS supports more file formats.

Quick Answer: [172](#)

Detailed Answer: [176](#)

26. Which of the following switches (options) copy all files, directories, and subdirectories, including empty subdirectories in the TEST folder?

- A.** xcopy *.* c:\test /T /S
- B.** xcopy *.* c:\test /S
- C.** xcopy *.* c:\test /E
- D.** xcopy *.* c:\test /S /T

Quick Answer: [172](#)

Detailed Answer: [176](#)

27. A co-worker just installed a second hard drive in his Windows computer. However, he does not see the drive in Explorer. What did he forget to do? (Select the three best answers.)

- A.** Format the drive
- B.** Partition the drive
- C.** Run FDISK
- D.** Initialize the drive

E. Set up the drive in the BIOS/UEFI

Quick Answer: [172](#)

Detailed Answer: [176](#)

28. Which of the following Windows editions does *not* include Aero?
(Select the two best answers.)

- A. Windows 7 Starter
- B. Windows 7 Ultimate
- C. Windows 8.1 Pro
- D. Windows Vista Business
- E. Windows Vista Home

Quick Answer: [172](#)

Detailed Answer: [177](#)

29. To create a restore point in Windows, what must perform which of the following tasks?

- A. Run Disk Defragmenter from the MMC.
- B. Run Backup and Restore from the Control Panel.
- C. Run the System Restore program from System Properties.
- D. Run the Disk Cleanup program from System Properties.

Quick Answer: [172](#)

Detailed Answer: [177](#)

30. Which of the following tasks can *not* be performed from the Printer Properties screen?

- A. Modifying spool settings
- B. Adding ports
- C. Pausing printing
- D. Enabling sharing

Quick Answer: [172](#)

Detailed Answer: [177](#)

31. You are setting up auditing on a Windows computer. If it's set up properly, which of the following logs should contain entries?

- A. Application log
- B. System log
- C. Security log

D. Maintenance log

Quick Answer: [172](#)

Detailed Answer: [177](#)

32. Which type of virus propagates itself by tunneling through the Internet and networks?

- A.** Macro
- B.** Phishing
- C.** Trojan
- D.** Worm

Quick Answer: [172](#)

Detailed Answer: [177](#)

33. Which component of Windows enables users to perform common tasks as non-administrators and, when necessary, as administrators without having to switch users, log off, or use Run As?

- A.** USMT
- B.** UAC
- C.** USB
- D.** VNC

Quick Answer: [172](#)

Detailed Answer: [177](#)

34. Which of the following tasks can be performed to secure your WAP/router? (Select all that apply.)

- A.** Changing the default SSID name
- B.** Turning off SSID broadcasting
- C.** Enabling DHCP
- D.** Disabling DHCP

Quick Answer: [172](#)

Detailed Answer: [177](#)

35. When you connect to a website to make a purchase by credit card, you want to make sure the website is secure. Which of the following statements best describes how to determine whether a site is secure? (Select the two best answers.)

- A.** You should look for the padlock (in the locked position)

- toward the top or bottom of the screen.
- B.** You should look for the padlock (in the unlocked position) toward the top or bottom of the screen.
 - C.** You should look for the protocol HTTP in the address or URL bar.
 - D.** You should look for the protocol HTTPS in the address or URL bar.

Quick Answer: [172](#)

Detailed Answer: [178](#)

- 36.** Which type of software helps protect against viruses that are attached to e-mail?

- A.** Firewall software
- B.** Antivirus software
- C.** Internet Explorer
- D.** Hardware firewall

Quick Answer: [172](#)

Detailed Answer: [178](#)

- 37.** Which of the following is an example of social engineering?

- A.** Asking for a username and password over the phone
- B.** Using someone else's unsecured wireless network
- C.** Hacking into a router
- D.** A virus

Quick Answer: [172](#)

Detailed Answer: [178](#)

- 38.** Where are software-based firewalls commonly implemented?

- A.** On routers
- B.** On servers
- C.** On clients
- D.** On switches

Quick Answer: [172](#)

Detailed Answer: [178](#)

- 39.** Making data appear as if it is coming from somewhere other than its original source is known as which of the following terms?

- A. Hacking
- B. Phishing
- C. Cracking
- D. Spoofing

Quick Answer: [172](#)

Detailed Answer: [178](#)

40. A fingerprint reader is known as which type of security technology?

- A. Biometrics
- B. Smart card
- C. Barcode reader
- D. SSID

Quick Answer: [172](#)

Detailed Answer: [178](#)

41. Which of the following is the most secure password?

- A. marquisdesod
- B. Marqu1sDeS0d
- C. MarquisDeSod
- D. Marqu1s_DeS0d

Quick Answer: [172](#)

Detailed Answer: [179](#)

42. Which shortcut key combination immediately locks Windows?

- A. Ctrl+Alt+Del
- B. Windows+R
- C. Windows+M
- D. Windows+L

Quick Answer: [172](#)

Detailed Answer: [179](#)

43. You are required to set up a secure connection between two offices over the Internet. Which technology should be used?

- A. VPN
- B. FTP
- C. VLAN

D. HTTP

Quick Answer: [172](#)

Detailed Answer: [179](#)

44. Which of the following is the most secure file system in Windows?

- A.** ext4
- B.** exFAT
- C.** NTFS
- D.** FAT32

Quick Answer: [172](#)

Detailed Answer: [179](#)

45. Which of the following is the most secure for your wireless network?

- A.** WEP
- B.** WPA2
- C.** TKIP
- D.** WPA

Quick Answer: [172](#)

Detailed Answer: [179](#)

46. Which of the following terms refers to when people are manipulated into giving access to network resources?

- A.** Hacking
- B.** Social engineering
- C.** Phishing
- D.** Cracking

Quick Answer: [172](#)

Detailed Answer: [179](#)

47. A customer's Windows computer needs a new larger, faster hard drive. Another technician in your company installs the new drive and then formats the old drive before delivering it to you for disposal. How secure is the customer's data?

- A.** Completely insecure
- B.** Very insecure
- C.** Secure

- D.** Completely secured

Quick Answer: [172](#)

Detailed Answer: [179](#)

48. Which type of malicious software creates multiple pop-ups on a computer?

- A.** Grayware
- B.** Spyware
- C.** Worms
- D.** Adware

Quick Answer: [172](#)

Detailed Answer: [179](#)

49. Which of the following offers hardware authentication?

- A.** NTFS
- B.** Smart card
- C.** Strong passwords
- D.** Encrypted passwords

Quick Answer: [172](#)

Detailed Answer: [180](#)

50. Which protocol encrypts transactions through a website?

- A.** HTTP
- B.** SSL
- C.** PuTTY
- D.** Kerberos

Quick Answer: [172](#)

Detailed Answer: [180](#)

51. Which of the following is a common local security policy?

- A.** Use of RAID
- B.** Password length
- C.** Router passwords
- D.** Use of a password to log in

Quick Answer: [172](#)

Detailed Answer: [180](#)

52. A co-worker downloads a game that ends up stealing information from the computer system. What is this known as?

- A. Worm
- B. Spam
- C. Trojan
- D. Spyware

Quick Answer: [172](#)

Detailed Answer: [180](#)

53. Which of the following is an open-source operating system?

- A. Android
- B. iOS
- C. Windows 8.1
- D. OS X

Quick Answer: [172](#)

Detailed Answer: [180](#)

54. Where can you obtain applications for mobile devices? (Select the three best answers.)

- A. Spotlight
- B. App Store
- C. Google Play
- D. iTunes

Quick Answer: [172](#)

Detailed Answer: [180](#)

55. Which of the following makes use of the X, Y, and Z axes?

- A. Gyroscope
- B. Lock Rotation
- C. Accelerometers
- D. Geotracking

Quick Answer: [172](#)

Detailed Answer: [180](#)

56. You need to locate a mobile device that was stolen. Which technology can aid in this?

- A. GPS
- B. Screen orientation
- C. Passcode locks
- D. Gmail

Quick Answer: [172](#)

Detailed Answer: [180](#)

57. Which kinds of data are typically synchronized on a smartphone?
(Select the two best answers.)

- A. Contacts
- B. PHP pages
- C. E-mail
- D. SQL Databases

Quick Answer: [172](#)

Detailed Answer: [181](#)

58. Which of the following are wireless connections to the Internet that are commonly made use of on a smartphone? (Select the two best answers.)

- A. GSM
- B. Bluetooth
- C. Wi-Fi
- D. Fiber optic

Quick Answer: [172](#)

Detailed Answer: [181](#)

59. Which of the following is the second step of the A+ troubleshooting theory?

- A. Identify the problem.
- B. Establish a probable cause.
- C. Test the theory.
- D. Document.

Quick Answer: [172](#)

Detailed Answer: [181](#)

60. You successfully modified the registry on a customer's PC. Now the customer's system gets onto the Internet normally. Which of the

following steps should be performed next?

- A. Bill the customer.
- B. Move on to the next computer.
- C. Document your solution.
- D. Run Disk Defrag.

Quick Answer: [172](#)

Detailed Answer: [181](#)

61. Which of the following is part of step 5 of the A+ troubleshooting theory?

- A. Identify the problem.
- B. Document findings, actions and outcomes.
- C. Establish a theory of probable cause.
- D. Implement preventative measures.

Quick Answer: [172](#)

Detailed Answer: [181](#)

62. Buzz gets an error that says “Error log full.” Where should you go to clear his error log?

- A. Device Manager
- B. System Information
- C. Recovery Console
- D. Event Viewer

Quick Answer: [172](#)

Detailed Answer: [181](#)

63. Which of the following must be accessed to boot the computer into Safe Mode?

- A. Windows RE
- B. Recovery Console
- C. Advanced Boot Options
- D. System Restore

Quick Answer: [172](#)

Detailed Answer: [181](#)

64. Which of the following tools checks protected system files?

- A. Chkdsk
- B. Xcopy
- C. Scandisk
- D. SFC

Quick Answer: [172](#)

Detailed Answer: [181](#)

65. After installing a new hard drive on a Windows computer, Len tries to format the drive. Windows does not show the format option in Disk Management. What did Len forget to do first?

- A. Run chkdsk.
- B. Partition the drive.
- C. Defragment the drive.
- D. Copy system files.

Quick Answer: [172](#)

Detailed Answer: [181](#)

66. When you reboot a computer, you get a message stating “No OS present, press any key to reboot.” Which of the following best describes the most likely problem?

- A. The hard drive’s SATA cable is not connected.
- B. The hard drive is not getting power.
- C. There is no active partition.
- D. The hard drive driver is not installed.

Quick Answer: [172](#)

Detailed Answer: [181](#)

67. Ray’s computer is running Windows. In the Device Manager, you notice that the NIC has an exclamation point. What does this tell you?

- A. The device is disabled.
- B. The device isn’t on the hardware compatibility list.
- C. The device is malfunctioning.
- D. The device is infected with malware.

Quick Answer: [172](#)

Detailed Answer: [182](#)

68. In which troubleshooting step are backups performed?

- A. Identify the problem.
- B. Test the theory to determine cause.
- C. Verify full system functionality.
- D. Document findings, actions, and outcomes.

Quick Answer: [172](#)

Detailed Answer: [182](#)

69. Which Windows System Recovery Option attempts to automatically fix problems?

- A. System Restore
- B. Startup Repair
- C. Complete PC Restore
- D. Reset your PC

Quick Answer: [172](#)

Detailed Answer: [182](#)

70. Which of the following best describes the fourth step of the CompTIA 6-step troubleshooting theory?

- A. Identify the problem.
- B. Establish a theory of probable cause.
- C. Establish a plan of action.
- D. Document findings, actions, and outcomes.

Quick Answer: [172](#)

Detailed Answer: [182](#)

71. Which utility enables you to troubleshoot an error with a file such as ntoskrnl.exe?

- A. Registry
- B. Event Viewer
- C. REGSVR32
- D. Terminal

Quick Answer: [172](#)

Detailed Answer: [182](#)

72. A blue screen is most often caused by _____.

- A. Driver failure
- B. Memory failure
- C. Hard drive failure
- D. CD-ROM failure

Quick Answer: [172](#)

Detailed Answer: [182](#)

73. A technician is installing a program on a Windows computer and the installation fails. Which of the following statements describes the next best step?

- A. Run the installer as an administrator.
- B. Contact the program's manufacturer.
- C. Reinstall Windows on the computer.
- D. Upgrade to the latest version of Windows.

Quick Answer: [172](#)

Detailed Answer: [182](#)

74. Which of the following statements best describes how to apply spray cleaner to a monitor?

- A. Spray the cleaner directly on the monitor screen.
- B. Spray the cleaner on the top of the monitor and wipe down.
- C. Spray evenly on the monitor.
- D. Spray the cleaner on a clean, lint-free cloth first.

Quick Answer: [172](#)

Detailed Answer: [183](#)

75. You and a co-worker are running network cables above the drop ceiling. The co-worker accidentally touches a live AC power line and is thrown off the ladder and onto the ground. He is dazed and can't stand. He is no longer near the AC power line. Which of the following statements best describes the first step you should take?

- A. Cut the power at the breaker.
- B. Move the co-worker farther down the hall.
- C. Apply CPR.
- D. Call 911.

Quick Answer: [172](#)

Detailed Answer: [183](#)

76. A computer you are working on has a lot of dust inside it. Which of the following statements best describes how to clean this?

- A.** Disassemble the power supply and remove the dust.
- B.** Use a vacuum to clean up the dust.
- C.** Use a surface dust cleaning solution.
- D.** Use compressed air to remove the dust.

Quick Answer: [172](#)

Detailed Answer: [183](#)

77. You are working on a very old printer and it begins to smoke. Which of the following statements best describes the first step you should take?

- A.** Turn off the printer.
- B.** Call 911.
- C.** Unplug the printer.
- D.** Call maintenance.
- E.** Tell the printer it is bad to smoke.

Quick Answer: [172](#)

Detailed Answer: [183](#)

78. Which of the following statements best describes the recommended method for handling an empty toner cartridge?

- A.** Throw it away.
- B.** Incinerate it.
- C.** Refill it.
- D.** Recycle it.

Quick Answer: [172](#)

Detailed Answer: [183](#)

79. One of your technicians is on a service call and is dealing with a furious customer who has been shouting loudly. The technician tries but cannot calm the customer down. Which of the following statements best describes the next step the technician should take?

- A.** He should let the customer continue to shout; sooner or later the customer will get tired and calm down.

- B.** He should call the supervisor and complain.
- C.** He should leave the customer site and document the incident.
- D.** He should shout back at the customer in an attempt to regain control of the situation.

Quick Answer: [172](#)

Detailed Answer: [183](#)

- 80.** While you are working at a customer site, a friend calls you on your cell phone. Which of the following statements best describes the recommended course of action?

- A.** Ignore the call for now.
- B.** Go outside and take the call.
- C.** Answer the phone as quietly as possible.
- D.** Text your friend.

Quick Answer: [172](#)

Detailed Answer: [183](#)

Quick-Check Answer Key

1. A, C, F

2. B

3. C

4. C

5. C

6. C

7. C, D

8. D

9. A

10. B

11. A

12. B

13. A, B

14. B

15. C

16. B

17. B, C

18. A

19. A

20. B, C

21. A, D

22. B

23. D

24. C

25. D

26. C

27. A, B, D

28. A, C

29. C

30. C

31. C

32. D

33. B

34. A, B, D

35. A, D

36. B

37. A

38. C

39. D

40. A

41. D

42. D

43. A

44. C

45. B

46. B

47. B

48. D

49. B

- 50. B
- 51. B
- 52. C
- 53. A
- 54. B, C, D
- 55. C
- 56. A
- 57. A, C
- 58. A, C
- 59. B
- 60. C
- 61. D
- 62. D
- 63. C
- 64. D
- 65. B
- 66. C
- 67. C
- 68. A
- 69. B
- 70. C
- 71. B
- 72. A
- 73. A
- 74. D
- 75. D
- 76. D
- 77. C
- 78. D
- 79. C
- 80. A

Answers and Explanations

- 1. Answers: A, C, and F.** Windows 8.1, Windows Vista, and Windows 7 are all Microsoft operating systems that you should know for the exam. iOS is the operating system Apple uses on its mobile devices. Android is the competitor of iOS and is an open-source operating system used on many other manufacturers' mobile devices. Android is developed from Linux. The original Linux was made for PCs with the goal of being a freely accessible, open-source platform. Okay, that was an easy one ... moving on!
- 2. Answer: B.** The only answer listed that is not an option for installing Windows 7 or higher is CD-ROM. If you wish to install Windows 7 by disc, it would be by DVD-ROM. Windows 7 can be installed over the network, deployed as an image, and installed from USB flash drive if you really want to!
- 3. Answer: C.** The New Technology File System (NTFS) is the default file system used by Windows. FAT and FAT32 are older, less desirable file systems that offer less functionality and less security and access smaller partition sizes. Compact Disc File System (CDFS) is the file system used by an optical disc.
- 4. Answer: C.** The Notification Area (also known as the system tray) is the area toward the bottom-right of your screen within the taskbar. It contains the time and any applications (shown as icons) currently running in memory. The System Properties dialog box contains configuration tabs for the computer name and network, hardware, system restore, and more. You can access any of the tabs in that dialog box quickly by going to Run and typing systempropertiescomputername.exe, systempropertiesadvanced.exe, and so on. The System32 folder resides within the Windows folder; it contains the critical Windows system files such as ntoskrnl.exe as well as applications such as cmd.exe. The Start menu gives access to most programs and configurations in Windows.
- 5. Answer: C.** Microsoft releases many patches for its operating systems and normally bundles these bug fixes and security patches together as service packs. Service packs are updates, which are free. Windows 7 and Vista use service packs. New versions of operating systems are just that—for example Windows 10, 8.1, and so on—these don't use service packs anymore, those are simply referred to as updates. And they all cost money. Windows Resource Kits are usually a combination of a book and disc that offer advanced technical guidance for the operating system. Service packs might

include driver updates, but that is only a small portion of what they do.

- 6. Answer: C.** Windows Vista requires a minimum of 512 MB of RAM for installation. Microsoft recommends 1 GB of RAM.
- 7. Answers: C and D.** Windows 7 and 8 32-bit require 1 GB of RAM. Windows 7 and 8 64-bit require 2 GB of RAM. The 32-bit version can run on a 32-bit or 64-bit CPU. The 64-bit version runs on a 64-bit CPU only.
-

Note

These same rules apply to Windows 8.1. Unless otherwise stated, if I mention Windows 8, I am also referring to Windows 8.1.

- 8. Answer: D.** The MMC (Microsoft Management Console) is a blank shell until you add snap-ins (such as Computer Management or the Performance Monitor) for functionality. Some people refer to each program in the Control Panel as an *applet*; the term was made famous by Apple. You don't add actual files or directories (folders) to the MMC; you add other programs within Windows. The MMC acts as an index for your programs and remembers the last place you were working (if you save it).
- 9. Answer: A.** Winload.exe is the Windows boot loader program for Windows 8, 7 and Vista. It works in conjunction with the Bootmgr file (Windows Boot Manager). Bootmgr is the first file to load in Windows. It reads the BCD and displays an OS menu (if there is more than one OS). The BCD is the Boot Configuration Data store; it is the successor to boot.ini. Setup.exe is the default name of the file that starts installations of Windows and many other programs. Ntoskrnl.exe is the main system file of Windows—without it, the system would crash and the file would have to be replaced or repaired.
- 10. Answer: B.** Disk Management is a tool found in Computer Management and allows for the creation, deletion, and formatting of partitions and logical drives. To view this application, use the Search tool (and search for Disk Management), or utilize the Start menu, or go to Run and type diskmgmt.msc. Disk Administrator is a much older version of this program used in older, unsupported versions of

Windows. Disk Cleanup is a built-in Windows program that can remove temporary files and other data that you probably won't use.

11. Answer: A. Primary partitions are the first partitions created on a drive. An OS should always be installed to a primary partition, but before installing the OS, the primary partition should be set to active. If you are installing to a new hard drive, Windows will automatically set the partition to active for you. A Master Boot Record (MBR)-based hard drive can have four primary partitions maximum, each with its own drive letter. If you need to subdivide the hard drive further, you can also use an extended partition, which is then broken up into logical drives. A GUID Partition Table (GPT)-based hard drive is not limited to this number—it can have up to 128 primary partitions. Any drive in Windows that has a drive letter is known as a volume.

12. Answer: B. The Task Manager enables you, via a click of the Processes tab, to view all current running processes and see how much memory each is using. The Task Manager can be opened by right-clicking the Taskbar and selecting it, by going to Run and typing `taskmgr`, by pressing Ctrl + Shift + Esc, or by pressing Ctrl + Alt + Del and selecting Task Manager. Msconfig is a utility in Windows that allows you to enable and disable applications and services and boot Windows in different modes. Chkdsk is a Command Prompt utility that searches for errors and fixes them (with the /F or /R switches). The System Information tool gives a summary of hardware resources, components, and the software environment; it can be opened by going to Run and typing `msinfo32`.

13. Answer: A and B. You can start, stop, and restart services within Computer Management > Services and Applications > Services. From there, right-click the service in question and configure it as you wish. You can also open Services from Start > All Programs > Administrative Tools or by going to the Run prompt and typing `services.msc`. The Task Manager can also be used to start and stop services, as well as to analyze the performance of the CPU, RAM, and the networking connections. Performance Monitor analyzes the computer in much more depth than the Task Manager. The MMC is the Microsoft Management Console, which is the index that can store other console windows such as Computer Management. Among other things, Msconfig is used to

enable/disable services, but not to start them.

14. Answer: B. In Windows 7, Windows Update is simply located in Start > All Programs. That is the default Start path for Windows 7 and Vista. In Windows 8, use the Search tool, Start menu, or go to Run and type wuapp.exe. The Control Panel should be configured as View by: Large icons or Small icons to quickly and easily find Windows Update. By the way, that is what the CompTIA A+ objectives call for you to know: each of the individual programs in the icons view of Control Panel. In Windows 7, the Control Panel is not located within Start > All Programs; it is simply Start > Control Panel. (In Windows 8.1, right-click the Start button and select Control Panel.)

15. Answer: C. The administrator is the only account level that can install device drivers. Standard user, and especially guest, accounts cannot install drivers or programs. The Power Users group is an older group from the Windows XP days that was carried over to Windows Vista and newer versions, but it has no real power in those operating systems.

16. Answer: B. MD is short for make directory and is the command to use when creating directories in the Command Prompt. CD is change directory. RD is remove directory, and SD deals with memory cards and is not a valid command in the Command Prompt.

17. Answers: B and C. To learn more about any command, type the command and then /?, or type help dir. dir help would attempt to find the file ‘HELP’ within the current directory. dir? would attempt to find information about ?.

18. Answer: A. Use the Command Prompt to launch the command ipconfig. Ipconfig is a networking command that displays the configuration of your network adapter. You can open the Command Prompt in a variety of ways. However, many commands require you to open the Command Prompt as an administrator. You can open the default Command Prompt by going to Run and typing cmd.exe or in Windows 7/Vista by going to Start > All Programs > Accessories. At this point, to run it as an administrator, right-click it and select Run as Administrator. Or, in any version of Windows you could type cmd in the search field and then press Ctrl + Shift + Enter. You can locate it in Windows 8.1 by right-clicking the Start button.

19. Answer: A. In Windows, the convert command is used to

upgrade FAT and FAT32 volumes to NTFS without loss of data. Ext4, or fourth extended file system, is a type of file system used by Linux-based systems. exFAT (FAT64) is especially designed for flash drives. NFS is the Network File System, something you might see in a storage area network.

20. Answers: B and C. Disk Defragmenter keeps Windows running more efficiently by making the files contiguous, lowering the amount of physical work the hard drive has to do. Check Disk or Error checking checks the hard drive for errors. Disk Management is used to partition and format drives. System Restore allows you to take a snapshot of the OS, enabling you to revert to older settings if something goes wrong. The Task Scheduler (previously Scheduled Tasks), as the name implies, enables you to set what time you want particular tasks to run.

21. Answers: A and D. The Windows recovery environment (Windows RE or WinRE) is also known as System Recovery Options. From here you can restore the system, fix file errors, and work in an unprotected Command Prompt. The Recovery Console is the predecessor of WinRE, in the deprecated Windows XP. Advanced Boot Options is the menu that can be accessed by pressing F8. It is also referred to as ABOM, and in Windows 8/8.1 is known as Startup Settings.

Note

In Windows 8, Startup Settings cannot be accessed with the F8 key unless you have previously issued the following command:

[Click here to view code image](#)

```
bcdedit /set {DEFAULT} bootmenupolicy legacy
```

22. Answer: B. Setuperr.log contains information about setup errors during the installation of Windows. Start with this log file when troubleshooting. A file size of 0 bytes indicates no errors during installation. Setupact.log contains the events that occurred during the installation. Unattend.xml is the answer file used by Windows during unattended installations. Setuplog.txt records events that occurred during the text portion installation of the deprecated Windows XP. Windows 8, 7, and Vista do not have a text portion during

installation.

- 23. Answer: D.** The physical memory limit of Windows 8 Pro is 512 GB on a 64-bit system. That is also the RAM limit for Windows 8 Enterprise; however, Windows 8 Standard can only access 128 GB of RAM. Keep in mind that 32-bit versions of Windows 8 (and other versions of Windows) can only access a maximum of 4 GB of RAM, due to the limitations of 32-bit CPUs. Even though 64-bit CPUs can address a realistic maximum of 256 terabytes (TB), software is always far more limited. 192 GB of RAM is the maximum that Windows 7 64-bit Professional, Ultimate, and Enterprise can access. See this link for memory limits of various Windows OSes:
[https://msdn.microsoft.com/en-us/library/windows/desktop/aa366778\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/desktop/aa366778(v=vs.85).aspx).

- 24. Answer: C.** The arrow pointing down tells you that the device is disabled in Windows. In many cases, it can easily be enabled by right-clicking it and selecting Enable. If the driver had not been installed, the device would most likely be sitting in a category called Unknown Devices. If the device is not even recognized by Windows, it will not show up on the list or will show up under Unknown Devices. There is no queue to be deleted.

- 25. Answer: D.** NTFS and FAT32 support the same number of file formats. This is the only listed similarity between the two. Otherwise, NTFS has the advantage: it supports file encryption in the form of Encrypting File System (EFS) and BitLocker, supports larger file sizes, and supports much larger volumes.

- 26. Answer: C.** /E is needed to copy the files, directories, subdirectories, *including* empty subdirectories. /S will copy files, directories, and subdirectories, but not empty subdirectories. If you add /T on to the end, you get the directory structure but no files are copied. Be sure to check out the Xcopy help file for more on its switches. And remember that *.* means all the files within a particular directory.

- 27. Answers: A, B, and D.** For secondary drives, you must go to Disk Management and initialize, partition, and format them. FDISK is an older DOS command. Today's computers' BIOS/UEFI should see the drive automatically with no configuration needed. In special cases, a hard drive might require special drivers.

- 28. Answers: A and C.** Windows 7 Starter and Windows 8.1 Pro.

Windows 7 Starter is a very basic, and 32-bit only, OS. Aero was released with Windows Vista and continued in Windows 7, but Windows 8 and 8.1 did away with Aero interface elements in favor of the Modern UI. The rest of the listed answers include Aero.

- 29. Answer: C.** System Restore is the tool used to create restore points. In all versions of Windows it can be found with the Search utility, or by going to the Control Panel > All Control Panel Icons > System, and then clicking the System Protection link. (Or, go to Run and type `systempropertiesprotection.exe`.) In Windows 7 it can be found in Start > All Programs > Accessories > System Tools as well. The disk defragmenter is used to fix hard drives that have become slow with fragmentation. Backup and Restore is the built in backup program included with Windows 7. Disk Cleanup removes unwanted junk from the system such as temporary files.
- 30. Answer: C.** Pausing printing in general and pausing individual documents is done by double-clicking on the printer in question and making the modifications from the ensuing window. All the others can be modified from the Printer Properties screen.
- 31. Answer: C.** After Auditing is turned on and specific resources are configured for auditing, you need to check the Event Viewer's Security log for the entries. These could be successful logons or misfired attempts at deleting files; there are literally hundreds of options. The Application log contains errors, warnings, and informational entries about applications. The System log deals with drivers and system files and so on. A system maintenance log can be used to record routine maintenance procedures; it is not something that is included in Windows.
- 32. Answer: D.** Worms travel through the Internet and through local area networks (LANs). They are similar to viruses but differ in that they self-replicate. Macros are viruses that attach to programs like Microsoft Word and Word files. Trojans are viruses that look like programs and often seek to gain backdoor access to a system. Phishing is an attempt to fraudulently acquire information, often by e-mail or phone.
- 33. Answer: B.** With User Account Control (UAC) enabled, users perform common tasks as non-administrators and, when necessary, as administrators without having to switch users, log off, or use Run As. If the user is logged in as an administrator, a pop-up window will appear verifying that the user has administrative privileges before

action is taken; the user need only click Yes. If the user is not logged on as an administrator, clicking Yes will cause Windows to prompt the user for an administrative username and password. USMT stands for User State Migration Tool, which is used to move files and user settings from one system (or systems) to another. USB is the Universal Serial Bus and has little to do with this question except to serve to confuse the unwary with another acronym. VNC stands for Virtual Network Computing; it's a type of program that allows a person at a computer to remotely take control of another computer or device. Examples include RealVNC and TightVNC.

34. Answers: A, B, and D. A multifunction network device that acts as both a wireless access point (WAP) and a router may come with a standard, default SSID name (that everyone knows). It is a good idea to change it (if the router doesn't ask you to do so automatically). After PCs and laptops have been associated with the wireless network, turn off SSID broadcasting so that no one else can find your WAP (with normal means). Disabling DHCP and instead using static IP addresses removes one of the types of packets that are broadcast from the WAP, making it more difficult to hack, but of course less functional and useful! Other ways to secure the wireless access point include changing the password; incorporating strong encryption such as Wi-Fi Protected Access version 2 (WPA2) with Advanced Encryption Standard (AES); and initiating MAC filtering, which only allows the computers with the MAC addresses you specify access to the wireless network.

35. Answers: A and D. The padlock in the locked position tells you that the website is using a secure certificate to protect your session. This padlock could be in different locations depending on the web browser used. Hypertext Transfer Protocol Secure (HTTPS) also defines that the session is using either the Secure Sockets Layer (SSL) protocol or the Transport Layer Security (TLS) protocol. HTTP by itself is enough for regular web sessions when you read documents and so on, but HTTPS is required when you log in to a site, purchase items, or do online banking. HTTPS opens a secure channel on port 443 as opposed to the default, insecure HTTP port 80.

36. Answer: B. Antivirus software (from vendors such as McAfee or Symantec) updates automatically so as to protect you against the latest viruses, whether they are attached to e-mails or are lying in

wait on removable media. You might also choose to use Windows Defender on newer versions of Windows. Firewalls protect against intrusion but not viruses. They could be hardware-based, such as the ones found in most SOHO multifunction network devices, or software-based, such as the Windows Firewall. Internet Explorer (and other web browsers) can be configured to make your system more secure (especially when dealing with web-based e-mails), but is not the best answer listed.

37. Answer: A. Social engineering is the practice of obtaining confidential information by manipulating people. Using someone else's network is just plain theft. Hacking into a router is just that, hacking. And a virus is a program that spreads through computers and networks (if executed by the user) that might or might not cause damage to files and applications.

38. Answer: C. Software-based firewalls, such as the Windows Firewall, normally run on client computers. It is possible that they will run on servers, especially if the server is acting as a network firewall, but the servers might rely on a hardware-based network firewall and/or an IDS/IPS solution. Hardware-based firewalls are also found in multifunction network devices. Some people might refer to these devices as *routers*, but the router functionality is really just one of the roles of the multifunction network device—separate from the firewall role. Plus, higher-end routers for larger networks are usually not combined with firewall functionality. Switches don't employ software firewalls, mainly because they don't use software (for the most part).

39. Answer: D. Spoofing is when a malicious user makes web pages, data, or e-mail appear to be coming from somewhere else. Hacking is a general term that describes an attacker trying to break into a system. Phishing is when a person fraudulently attempts to gain confidential information from unsuspecting users. Cracking is a term that is used to describe breaking passwords.

40. Answer: A. Biometrics is the study of recognizing humans. A fingerprint reader falls into this category as a biometric device. Smart cards are often the size of credit cards and store information that is transmitted to a reader. A barcode reader is a device that scans codes made up of different-width parallel lines, and SSID is a form of device identification that is broadcast from a wireless access point.

41. Answer: D. A password gets more secure as you increase its length and then add capital letters, numbers, and finally special characters. Note that Marqu1s_DeS0d has a capital M, a 1 in the place of an I, an underscore, a capital D, a capital S, and a zero. The only thing that this password lacks to make it a super password is the length. Fifteen characters or more is an industry standard for highly secure passwords.

42. Answer: D. Windows+L automatically and immediately locks the computer. Only the person who locked it or an administrator can unlock it. (Unless, of course, another user knows your password.) Ctrl+Alt+Del brings up the Windows Security dialog box. From there, you can lock the computer, too, but with an extra step. Windows+M minimizes all open applications, and Windows+R brings up the Run prompt.

43. Answer: A. You should install a virtual private network (VPN). This enables a secure connection between two offices using the Internet. It utilizes one of two tunneling protocols to make the secure connection: Point-to-Point Tunneling Protocol (PPTP) or Layer 2 Tunneling Protocol (L2TP). FTP is the File Transfer Protocol; by default it is not secure. VLAN stands for virtual local area network; a VLAN is confined within a single office but does offer some security in the form of compartmentalization. Hypertext Transfer Protocol (HTTP) is used to make connections to websites but is not secure by itself; that would require HTTPS.

44. Answer: C. NTFS is Windows' New Technology File System. It secures files and folders (and in fact, the whole partition) much better than the older FAT32 system does. EFS, BitLocker, and NTFS permissions are just a few of the advantages of an NTFS partition. Ext4 (and ext3) is used by Linux-based systems. exFAT is another type of file system used often by SD cards and other removable memory cards.

45. Answer: B. WPA2 is superior to WPA, and WEP and takes much longer to crack (if it is crackable at all). It works best with AES. Wired Equivalent Privacy (WEP) is deprecated (outdated) and is considered insecure. It should be avoided unless it is the only encryption option you have; even then, you should consider new hardware and software. TKIP stands for Temporal Key Integrity Protocol; it is a deprecated encryption protocol used with WEP and WPA. The replacement is either AES or (less commonly) CCMP.

46. Answer: B. Social engineering is when fraudulent individuals try to get information from users through manipulation. Compare this to hacking, which is attempting to break into a system with technology, and cracking, which is breaking passwords with software. Phishing is a type of social engineering; it is implemented via e-mail or over the phone (vishing).

47. Answer: B. The data is very insecure. Many tools can recover data from a drive after it is formatted. Some companies will low-level format the drive (as opposed to a standard format in Windows for example) and keep it in storage indefinitely. The organization might go further and use data wiping software, in fact this might be a policy for the organization. Always check your organization's policies to be sure you are disposing or recycling hard drives properly.

48. Answer: D. Adware creates those pesky pop-up windows. All of the listed answers are types of malicious software (malware). Grayware is a classification of malware that behaves in an annoying manner but is not necessarily detrimental to the computer system. Spyware is software that tracks a user's actions on the Internet, without the user's knowledge. A worm is a piece of code that infects files and systems; it self-replicates and spreads throughout networks on its own.

49. Answer: B. Smart cards are actual physical cards that you use as authentication tools. They are sometimes referred to as *tokens* and have built-in processors. Examples of smart cards include the Personal Identity Verification (PIV) card used by U.S. government employees and the Common Access Card (CAC) used by Department of Defense personnel. All of the other answers are software related and are logical in their implementations.

50. Answer: B. Secure Sockets Layer (SSL) and the newer Transport Layer Security (TLS) encrypt the transactions through the website. These SSL certificates are often accompanied by the protocol HTTPS. HTTP by itself is not secure. PuTTY is a tool used for secure text-based connections to hosts and does not involve the website. Kerberos is the protocol used on a domain to encrypt passwords.

51. Answer: B. Common local security policies include password length, duration, and complexity. Just the use of a password doesn't constitute a password policy. An example of a password policy

would be when an organization mandates that passwords be 15 characters in length with at least 1 capital letter, 1 number, and 1 special character. In Windows you would access: Local Security Policy > Security Settings > Account Policies > Password Policy, to make changes to these things.

- 52. Answer: C.** A Trojan is a disguised program that is used to gain access to a computer and either steal information or take control of the computer. A worm is code that infects a system and self-replicates to other systems. Spam is the abuse of e-mail and the bane of mankind. Spyware is software unwittingly downloaded from the Internet that tracks a user's actions while surfing the Web.
- 53. Answer: A.** Android is an open-source OS. It is freely downloadable and can be modified by manufacturers of mobile devices to suit their specific hardware. Apple's iOS and OS X and Microsoft's OSes are closed-source; a company would have to pay a fee for every license of the OS; that is if it was even available to them.
- 54. Answers: B, C, and D.** Android users download applications (apps) from Google Play. Apple users download apps from the App Store or from within iTunes. The Spotlight tool is a utility in Apple's OS X operating system that allows you to search the computer and the Internet by typing in search phrases.
- 55. Answer: C.** Accelerometers are combinations of hardware and software that measure velocity on the X axis (left to right), the Y axis (up and down), and the Z axis (back to front). This aids in screen orientation on mobile devices. The gyroscope adds the measurements of pitch, roll, and yaw, which are necessary for today's mobile games and other apps. Lock Rotation is a setting (and a switch) on Apple iPad devices that stops the screen from reorienting as you rotate it. Geotracking is the practice of tracking and recording the location of a mobile device.
- 56. Answer: A.** The Global Positioning System (GPS) technology can be instrumental in locating lost or stolen mobile devices. Many devices have this installed; others rely on geotracking or Wi-Fi hotspot locating techniques. (You are being watched!) Screen orientation is how the screen is displayed depending on how you hold the device: vertical or horizontal (or upside down). It can be calibrated on Android devices with the G-Sensor calibration tool. Passcode locks are sets of numbers that are required to be entered

when a mobile device is turned on or taken out of sleep mode. Gmail is a web-based e-mail service by Google. It is incorporated into the Android operating system.

- 57. Answers: A and C.** Some of the things you might synchronize on a smartphone include contacts, e-mail, programs, pictures, music, and videos. However, mobile devices would not normally synchronize PHP web pages or Microsoft SQL databases. PHP is a commonly used programming language for websites, perhaps the second most common web markup language next to HTML, and is often used either by itself or within HTML pages.
- 58. Answers: A and C.** The Global System for Mobile Communications (GSM) and the General Packet Radio Service (GPRS) are used to connect to the Internet at 2G, 3G, and 4G speeds. Wi-Fi connections also allow connections to the Internet given there is a hotspot available. They work the same way Wi-Fi does with PCs and laptops. Bluetooth is used to connect wireless devices to the mobile device—for example, headsets. Fiber optic is not wireless, and mobile devices do not make use of it.
- 59. Answer: B.** The second step is to establish a theory of probable cause. You are looking for the obvious or most probable cause for the problem. This comes after identifying the problem and before testing your theory. Documentation is last.
- 60. Answer: C.** Documentation is the final step in the troubleshooting theory. This helps you to better understand and articulate exactly what the problem (and solution) was. If you see this problem in the future, you can consult your documentation for the solution. Plus, others on your team can do the same. In addition, it is common company policy to document all findings as part of a trouble ticket.
- 61. Answer: D.** Implement preventative measures as part of step 5 to ensure that the problem will not happen again. The entire step is “Verify full system functionality and if applicable implement preventive measures.” It comes just after establishing a plan of action and just before documenting findings, actions, and outcomes.
- 62. Answer: D.** The Event Viewer contains the error logs; they are finite in size. You could either clear the log or increase the size of the log. The other three do not contain error logs.
- 63. Answer: C.** The Advanced Boot Options menu has many options, including Safe Mode. This menu can be accessed by pressing F8

when the computer first boots up. *Know those ABOM options!* (In Windows 8 and higher, the Advanced Boot Options are also known as “Startup Settings.”)

64. Answer: D. System File Checker (SFC) checks protected system files and replaces incorrect versions. None of the other options check system files. Chkdsk can check for and repair errors, but just regular files. Xcopy is used to copy entire directories of information, but Robocopy is recommended as the successor to Xcopy. Scandisk is an older command-line scanning tool that today’s versions of Windows don’t use. It is replaced by Chkdsk.

65. Answer: B. You must partition the drive before formatting. Copying files can be done only after formatting is complete. Chkdsk has little value on an unformatted drive because it checks files for errors and integrity. Something else not mentioned here is that a second drive would have to be initialized in Windows before use.

66. Answer: C. The primary partition must be set to active to boot to the operating system. If the SATA cable was not connected to the drive the BIOS/UEFI would simply try to boot to another device (or to the network). The same holds true for power; if the drive does not get power, the BIOS will not recognize it. Finally, hard drives typically do not need drivers simply to be recognized. However, some SCSI-based drives do require that their drivers be installed previous to the installation of the operating system.

67. Answer: C. A black exclamation point on a yellow field tells you that the device is in a problem state and is probably malfunctioning. The device might need to be replaced or reseated, or the firmware might need to be upgraded. If the device was disabled, it would show an arrow pointing down. The hardware compatibility list (HCL) is an older list of compatible devices for Windows, but more commonly you would use an upgrade advisor or compatibility tool on the Microsoft website instead, but regardless, this is totally separate from the Device Manager. Also, the Device Manager won’t tell you if a system is infected with malware. Individual devices generally don’t get infected with malware anyway; normally the operating system does.

68. Answer: A. You should perform backups during the first step: Identify the problem. The idea is that you back up the data before you actually do anything to the computer. Testing theories is step 3. Verifying full functionality is step 5. Documenting findings, actions

and outcomes is step 6.

69. Answer: B. The best answer is Startup repair. Startup repair attempts to fix issues automatically. This is available in Windows' Windows RE System Recovery Options. Although System Restore can "fix" problems, it only does this by resetting the computer to an earlier point in time, and as such is not the best answer. Complete PC Restore is an older program used to restore Windows from backup, but is not available in the System Recovery Options. Reset your PC is a Windows Recovery Environment option with Windows 8. This might fix a problem, but it wipes settings and data, making it a possible solution, but only after you have tried other methods. (Instead of Reset your PC, consider Refresh your PC on Windows 8 systems first.)

70. Answer: C. The fourth step of the CompTIA 6-step troubleshooting process is: Establish a plan of action to resolve the problem and implement the solution. Identify the problem is step 1. Establish a theory of probable cause is step 2. Document findings, actions and outcomes is step 6.

71. Answer: B. The Event Viewer logs all errors that occur on a system. Particularly, the System log would contain the information useful in troubleshooting this error. The Windows Registry is a database that stores the settings for Windows. It contains hardware and software information, and user settings. If certain Dynamic-Link Libraries (DLLs) or ActiveX controls need to be troubleshooted (for example ones that work with Internet Explorer), they can be manipulated with the REGSVR32 command. OS X and Linux use a utility called *Terminal* that allows you to manipulate data and make configuration changes similar to the Command Prompt in Windows.

72. Answer: A. The most common reason for a BSOD (blue screen of death, otherwise known as a stop error) is driver failure. Second on the list is memory/processor-related errors. Hard drives and optical drives themselves should not cause stop errors, but their drivers might.

73. Answer: A. Run the installer as an administrator. Programs cannot be installed by standard users or guests. You must have administrative rights to do so.

74. Answer: D. Never spray any cleaner directly on a display. Spray on a lint-free cloth first, and then wipe the display gently. Try not to get any liquid in the cracks at the edge of the screen. A lot of companies

sell products that are half isopropyl alcohol and half water. You could also make this yourself. Again, remember to put the solution on a lint-free cloth first.

75. Answer: D. Because the immediate danger is gone, call 911 right away. Then apply first aid and CPR as necessary. The next step would be to shut the power off at the electrical panel or call the building supervisor to have the power shut off. However, it is always important to be aware of and comply with company policies before taking certain actions. Be aware of company policies before accidents happen!

76. Answer: D. Compressed air is safe. However, you might want to do this outside and vacuum up the left over residue. Never disassemble the power supply. It is called a field replaceable unit (FRU) for good reason. Do not stick a vacuum cleaner inside a computer; it could damage the components. Do not spray any kind of solutions inside the computer; this will damage the components.

77. Answer: C. Turning the printer off might not be enough. It might be seriously malfunctioning, so pull the plug. Dialing 911 is not necessary unless a fire has started. Wait at least 15 minutes before opening the printer to see what caused the smoke. Printer power supplies can fail just like a PC's power supply can. In fact, a laser printer power supply does more work because it needs to convert for high voltages in the 600 V range. If you have a maintenance contract with a printer company, and the printer is under warranty or contained in the service contract, you could call the maintenance company to fix the problem. Be ready to give a detailed account of exactly what happened. You could tell the printer that it is bad to smoke, but that would be belligerent and would probably show that you have been working too hard. All kidding aside, be ready to disconnect power at a moment's notice.

78. Answer: D. Recycle toner cartridges according to your company's policies and procedures, or according to municipality rules and regulations. Do not throw away or incinerate toner cartridges. Although it is possible to refill toner cartridges, it is not the recommended way to handle an empty cartridge because it is messy and time-consuming. Most companies simply purchase new toner cartridges.

79. Answer: C. The technician should leave the customer site and document the incident. In rare cases, there is no way to calm the

customer down. If the customer has been shouting for a while and the technician cannot calm the customer down, it's pointless to stay and wait. However, you don't want to call your supervisor and complain about it while you're at the customer's location; this will probably serve to infuriate the customer further. Wait until you have left the customer's premises. Never shout back at the customer; this is not a battle for power, and never take it personally. Be sure to document the incident in depth after leaving the customer's location. Definitely let your supervisor know what has happened—without complaining.

- 80. Answer:** A. While you're on the job site, limit phone calls to only emergencies or calls from your employer about other customers. Taking a personal phone call, texting, or using social media sites while working at a client site is considered unprofessional. Be professional when you're on the job!

Chapter Nine. 220-902 Practice Exam B

The previous 220-902 exam was the introduction. This next test takes it to the next level and can be considered an intermediate practice test. I blend in some more difficult questions this time.

The main goal of this practice exam is to make sure you understand all of the concepts before moving on to the next test. If you didn't already, I suggest taking a break between exams. If you just completed the first exam, give yourself a half-hour or so before you begin this one. If you didn't score 90 percent or higher on exam A, go back and study; then retake exam A until you pass with 90 percent or higher.

Write down your answers and check them against the answer key, which immediately follows the exam. After the answer key you will find the explanations for all of the answers. Good luck!

Practice Questions

1. In which step of the CompTIA A+ troubleshooting process would you question the user?

- A.** Identify the problem.
- B.** Establish a theory.
- C.** Establish a plan of action.
- D.** Document findings.

Quick Answer: [204](#)

Detailed Answer: [205](#)

2. Which of the following tools is used when setting the computer to boot with the Selective Startup feature?

- A.** Task Manager
- B.** Windows RE
- C.** Safe Mode
- D.** Msconfig

Quick Answer: [204](#)

Detailed Answer: [205](#)

3. You have been given the task of installing a new hard drive on a server for a customer. The customer will be supervising your work.

Which of the following questions should be asked of the customer first?

- A. “What is the administrator password?”
- B. “Are there any current backups?”
- C. “Do you want me to shut down the server?”
- D. “Which version of Windows Server is this?”

Quick Answer: [204](#)

Detailed Answer: [205](#)

4. You just upgraded the president’s computer’s video driver. Now, the Windows 8 system will not boot. Which of the following steps should be taken first?

- A. Access Windows RE.
- B. Boot into Safe Mode and roll back the driver.
- C. Reinstall the operating system.
- D. Boot into Directory Services Restore mode.

Quick Answer: [204](#)

Detailed Answer: [205](#)

5. Which tool is used to analyze and diagnose a video card?

- A. Device Manager
- B. DxDiag
- C. Services.msc
- D. USMT

Quick Answer: [204](#)

Detailed Answer: [205](#)

6. Which of the following is a feature of Windows 7 but not Windows Vista?

- A. UAC
- B. Aero
- C. Application dock
- D. Sidebar

Quick Answer: [204](#)

Detailed Answer: [205](#)

7. Where is registry hive data stored?

- A. \%systemroot%\Windows
- B. \%systemroot%\Windows\System32\Config
- C. \%systemroot%\System32
- D. \%systemroot%\System32\Config

Quick Answer: [204](#)

Detailed Answer: [206](#)

8. Which of the following statements best describes how to restart the Print Spooler service? (Select the two best answers.)

- A. Enter net stop spooler and then net start spooler in the command line.
- B. Enter net stop print spooler and then net start print spooler in the command line.
- C. Go to Computer Management > Services and restart the Print Spooler service.
- D. Go to Computer Management > Services and Applications > Services and restart the Print Spooler service.

Quick Answer: [204](#)

Detailed Answer: [206](#)

9. Clinton needs a more secure partition on his hard drive. Currently, the only partition on the drive (C:) is formatted as FAT32. He cannot lose the data on the drive but must have a higher level of security, so he is asking you to change the drive to NTFS. Which of the following is the proper syntax for this procedure?

- A. Change C: /FS:NTFS
- B. Change C: NTFS /FS
- C. Convert C: /FS:NTFS
- D. Convert C: NTFS /FS

Quick Answer: [204](#)

Detailed Answer: [206](#)

10. Which of the following statements best describes a common risk when installing Windows drivers that are unsigned?

- A. System stability may be compromised.
- B. Files might be cross-linked.
- C. The drive might become fragmented.

- D. Physical damage to devices might occur.

Quick Answer: [204](#)

Detailed Answer: [206](#)

11. Which of the following utilities can be used to view the startup programs?

- A. Ipconfig
- B. Ping
- C. Regedit
- D. DxDiag

Quick Answer: [204](#)

Detailed Answer: [206](#)

12. Tom has a 200 GB hard drive partition (known as C:) on a Windows Vista computer. He has 20 GB free space on the partition. Which of the following statements best describes how he can defrag the partition?

- A. He can run the Disk Defragmenter in Computer Management.
- B. He can run `defrag.exe -f` in the command-line.
- C. He can run `defrag.exe -v` in the command-line.
- D. He can run `defrag.exe -A` in the command-line.

Quick Answer: [204](#)

Detailed Answer: [206](#)

13. Which of the following settings must be established when you want to make a secure wireless connection? (Select all that apply.)

- A. The brand of access point
- B. The wireless standard used
- C. The encryption standard used
- D. The SSID of the access point

Quick Answer: [204](#)

Detailed Answer: [206](#)

14. Which Windows utility is used to prepare a drive image for duplication across the network?

- A. XCOPY
- B. SYSPREP

- C. Ghost
- D. Image Clone

Quick Answer: [204](#)

Detailed Answer: [207](#)

- 15.** In Windows, when will a computer dump the physical memory?
- A. When the wrong processor is installed
 - B. When a device is missing drivers
 - C. When the computer was shut down improperly
 - D. When the computer detects a condition from which it cannot recover

Quick Answer: [204](#)

Detailed Answer: [207](#)

- 16.** When a person takes control of a session between a server and a client, it is known as which type of attack?
- A. DDoS
 - B. Smurf
 - C. Session hijacking
 - D. Malicious software

Quick Answer: [204](#)

Detailed Answer: [207](#)

- 17.** The message “The Windows Boot Configuration Data File Is Missing Required Information” appears on the screen. Which command can repair this issue?
- A. bootrec /fixboot
 - B. bootrec /fixmbr
 - C. bootrec /rebuildbcd
 - D. boot\bcd

Quick Answer: [204](#)

Detailed Answer: [207](#)

- 18.** Which of the following should be performed during a hard drive replacement to best maintain data privacy?
- A. Completely erase the old drive prior to disposal.
 - B. Format the new hard drive twice prior to installation.

- C. Only use FAT32 file systems when formatting the new drives.
- D. Install antivirus software on the computer before removing the old hard drive.

Quick Answer: [204](#)

Detailed Answer: [207](#)

19. You are utilizing WSUS and are testing new updates on PCs. What is this an example of?

- A. Host-based firewall
- B. Application baselining
- C. Patch management
- D. Virtualization

Quick Answer: [204](#)

Detailed Answer: [207](#)

20. Which of the following troubleshooting steps is next after determining the cause?

- A. Document findings, actions, and outcomes
- B. Verify full system functionality and, if applicable, implement preventative measures
- C. Establish a plan of action to resolve the problem and implement the solution
- D. Question the user and identify user changes

Quick Answer: [204](#)

Detailed Answer: [208](#)

21. Which tool is used to back up data on the C: drive in Windows 8?

- A. Backup and Restore
- B. Backup Status and Configuration
- C. Time Machine
- D. File History

Quick Answer: [204](#)

Detailed Answer: [208](#)

22. Which of the following is the minimum processor requirement for Windows 7?

- A. 800 MHz
- B. 1 GHz
- C. 2 GHz
- D. 2 GB

Quick Answer: [204](#)

Detailed Answer: [208](#)

23. You create an answer file to aid in installing Windows. Which type of installation are you performing? (Select the best answer.)

- A. Drive image installation
- B. USB installation
- C. Multiboot installation
- D. Unattended installation

Quick Answer: [204](#)

Detailed Answer: [208](#)

24. How much free drive space is required to install Windows Vista?

- A. 20 GB
- B. 2 GB
- C. 4 GB
- D. 15 GB

Quick Answer: [204](#)

Detailed Answer: [208](#)

25. How much free drive space is required to install Windows 8?
(Select the two best answers.)

- A. 8 GB
- B. 10 GB
- C. 16 GB
- D. 20 GB

Quick Answer: [204](#)

Detailed Answer: [208](#)

26. Which component of the Windows GUI specifically includes the clock and other programs that run in the background?

- A. Quick Launch

- B.** Taskbar
- C.** Notification Area
- D.** Desktop

Quick Answer: [204](#)

Detailed Answer: [208](#)

27. Which of the following procedures best describes how to open the Command Prompt as an administrator (known as elevated mode) in Windows 7/Vista? (Select all that apply.)

- A.** Click Start > All Programs > Accessories; then right-click Command Prompt and select Run as Administrator.
- B.** Click Start > All Programs > Accessories; then right-click Command Prompt and select Run in elevated mode.
- C.** Click Start and type cmd in the search field, and instead of pressing Enter, press Ctrl+Shift+Enter.
- D.** Click Start and type cmd in Run prompt, and instead of pressing Enter, press Ctrl+Shift+Enter.

Quick Answer: [204](#)

Detailed Answer: [208](#)

28. Which versions of Windows 8 allow for joining domains? (Select the two best answers.)

- A.** Standard
- B.** Pro
- C.** Ultimate
- D.** Enterprise

Quick Answer: [204](#)

Detailed Answer: [209](#)

29. One of your customers reports that there is a large amount of spam in her e-mail inbox. Which of the following statements describes the best course of action to recommend to her?

- A.** Advise her to create a new e-mail account.
- B.** Advise her to add the senders to the junk e-mail sender list.
- C.** Advise her to find a new ISP.
- D.** Advise her to reply to all spam and opt out of future e-mails.

Quick Answer: [204](#)

Detailed Answer: [209](#)

30. In Windows, where can devices like the display and hard drives be configured to turn off after a certain amount of time?

- A. Power plans
- B. Display Properties
- C. Computer Management
- D. Task Manager

Quick Answer: [204](#)

Detailed Answer: [209](#)

31. Which of the following procedures best describes how to find out which type of connection the printer is using?

- A. Right-click the printer, select Properties, and click the Sharing tab.
- B. Right-click the printer, select Properties, and click the Advanced tab.
- C. Right-click the printer, select Properties, and click the Separator Page button.
- D. Right-click the printer, select Properties, and click the Ports tab.

Quick Answer: [204](#)

Detailed Answer: [209](#)

32. Your customer is having problems printing from an application. You attempt to send a test page to the printer. Which of the following statements best describes why a test page should be used to troubleshoot the issue?

- A. It allows you to see the quality of the printer output.
- B. The output of the test page allows you to initiate diagnostic routines on the printer.
- C. It verifies the connectivity and illuminates possible application problems.
- D. It clears the print queue and resets the printer memory.

Quick Answer: [204](#)

Detailed Answer: [209](#)

33. A user's hard drive seems very slow in its reaction time when opening applications. Which of the following statements best describes the most likely cause of this?

- A. The drive needs to be initialized.
- B. The temporary files need to be deleted.
- C. The drive is fragmented.
- D. The drive's SATA data connector is loose.

Quick Answer: [204](#)

Detailed Answer: [209](#)

34. Which of the following actions will *not* secure a functioning computer workstation?

- A. Setting a strong password
- B. Changing default usernames
- C. Disabling the guest account
- D. Sanitizing the hard drive

Quick Answer: [204](#)

Detailed Answer: [209](#)

35. Which utility enables you to implement auditing on a single Windows computer?

- A. Local Security Policy
- B. Group Policy Editor
- C. AD DS
- D. Services.msc

Quick Answer: [204](#)

Detailed Answer: [210](#)

36. Which of the following statements best describes the function of a device driver?

- A. Modifies applications
- B. Works with memory more efficiently
- C. Improves device performance
- D. Allows the OS to talk to the device

Quick Answer: [204](#)

Detailed Answer: [210](#)

37. After installing Windows successfully, which of the following steps should be performed next? (Select the two best answers.)

- A. Create policies.
- B. Connect to WLANs.
- C. Enable the Windows Firewall.
- D. Run Windows Update.

Quick Answer: [204](#)

Detailed Answer: [210](#)

38. Where are restore points stored after they are created?

- A. The Recycler folder
- B. The System32 folder
- C. The %systemroot% folder
- D. The System Volume Information folder

Quick Answer: [204](#)

Detailed Answer: [210](#)

39. Which of the following are types of social engineering? (Select the two best answers.)

- A. Malware
- B. Shoulder surfing
- C. Tailgating
- D. Rootkits

Quick Answer: [204](#)

Detailed Answer: [210](#)

40. Which of the following is the service that controls the printing of documents in a Windows computer.

- A. Printer
- B. Print server
- C. Print pooling
- D. Print Spooler

Quick Answer: [204](#)

Detailed Answer: [210](#)

41. Which of the following is the best way to ensure that a hard drive is secure for disposal?

- A. Magnetically erase the drive.
- B. Format the drive.
- C. Run bootrec /fixmbr.
- D. Convert the drive to NTFS.

Quick Answer: [204](#)

Detailed Answer: [210](#)

42. A month ago, you set up a wireless access point/router for a small business that is a customer of yours. Now, the customer calls and complains that Internet access is getting slower and slower. As you look at the WAP/router, you notice that it was reset at some point and is now set for open access. You then guess that neighboring companies are using the service connection. Which of the following statements best describes how you can restrict access to your customer's wireless connection? (Select the two best answers.)

- A. Configure the wireless access point to use WPA2.
- B. Configure MS-CHAP on the WAP/router.
- C. Disable SSID broadcasting.
- D. Move the WAP/router to another corner of the office.

Quick Answer: [204](#)

Detailed Answer: [211](#)

43. A first-level help desk support technician receives a call from a customer and works with the customer to resolve the call for several minutes but the technician is unsuccessful. Which of the following steps should the technician perform next?

- A. The technician should explain to the customer that he will receive a callback when someone more qualified is available.
- B. The technician should escalate the call to another technician.
- C. The technician should explain to the customer that the problem cannot be resolved and end the call.
- D. The technician should continue working with the customer until the problem is resolved.

Quick Answer: [204](#)

Detailed Answer: [211](#)

44. A customer complains that there is nothing showing on the display of his laptop. Which of the following should you attempt first on the

computer?

- A. You should replace the inverter.
- B. You should reinstall the video drivers.
- C. You should boot into Safe mode.
- D. You should check whether the laptop is in Standby or Hibernate mode.

Quick Answer: [204](#)

Detailed Answer: [211](#)

45. During an installation of Windows 7, you are given an opportunity to load alternative third-party drivers. Which device are you most likely loading drivers for?

- A. CD-ROM
- B. SCSI drive
- C. USB mouse
- D. BIOS/UEFI

Quick Answer: [204](#)

Detailed Answer: [211](#)

46. A Windows 8 computer in a Windows workgroup can have how many concurrent connections?

- A. 10 or fewer
- B. 15 or fewer
- C. 20 or fewer
- D. 25 or fewer

Quick Answer: [204](#)

Detailed Answer: [211](#)

47. Megan's laptop runs perfectly when at work, but when she takes it on the road, it cannot get on the Internet. Internally, the company uses static IP addresses for all computers. What should you do to fix the problem?

- A. Tell Megan to get a wireless cellular card and service.
- B. Tell Megan to use DHCP.
- C. Tell Megan to configure the alternate configuration tab of TCP/IP properties.

- D. Configure a static IP address in the Alternate Configuration tab of the user's TCP/IP properties and enable DHCP in the General tab.

Quick Answer: [204](#)

Detailed Answer: [211](#)

48. Before implementing a solution to a problem, which of the following should be done?

- A. Verify full system functionality.
- B. Perform a system backup.
- C. Test the solution.
- D. Document the solution.

Quick Answer: [204](#)

Detailed Answer: [211](#)

49. Which power-saving mode enables for the best power savings, while still allowing the session to be reactivated later?

- A. Standby
- B. Suspend
- C. Hibernate
- D. Shutdown

Quick Answer: [204](#)

Detailed Answer: [212](#)

50. John's computer has two hard drives, each 300 GB. The first is the system drive and is formatted as NTFS. The second is the data drive and is formatted as FAT32. Which of the following statements are true? (Select the two best answers.)

- A. Files on the system drive can be secured.
- B. Larger logical drives can be made on the data drive.
- C. The cluster size is larger, and storage is more efficient on the system drive.
- D. The cluster size is smaller, and storage is more efficient on the system drive.

Quick Answer: [204](#)

Detailed Answer: [212](#)

51. When using the command-line, a switch _____.

- A. enables the command to work across any operating system
- B. is used in application icons
- C. changes the core behavior of a command, forcing the command to perform unrelated actions
- D. alters the actions of a command, such as widening or narrowing the function of the command

Quick Answer: [204](#)

Detailed Answer: [212](#)

52. A co-worker was installing a new program when the Windows 7 computer suddenly restarted. Now, when the computer starts, it gets partially through the boot process and then reboots. Which of the following is the quickest method to get the computer running without losing any of the user's data?

- A. Reinstall the OS.
- B. Boot using Last Known Good configuration.
- C. Boot into Safe Mode and perform a Windows System Restore.
- D. Perform a factory restore.

Quick Answer: [204](#)

Detailed Answer: [212](#)

53. You need to view any application errors that have occurred today. Which tool should be used?

- A. Event Viewer
- B. Local Security Policy
- C. Msconfig
- D. sfc /scannow

Quick Answer: [204](#)

Detailed Answer: [212](#)

54. Which of the following commands can help you modify the startup environment?

- A. Msconfig
- B. Ipconfig
- C. Boot Config Editor

D. Registry Editor

Quick Answer: [204](#)

Detailed Answer: [212](#)

55. Which of the following log files references third-party software error messages?

- A. Security log
- B. System log
- C. Application log
- D. Setuperr.log

Quick Answer: [204](#)

Detailed Answer: [212](#)

56. Which of the following provides the lowest level of wireless security protection?

- A. Disable the SSID broadcast.
- B. Use RADIUS.
- C. Use WPA2.
- D. Enable WEP on the wireless access point.

Quick Answer: [204](#)

Detailed Answer: [213](#)

57. A customer uses an unencrypted wireless network. One of the users has shared a folder for access by any computer. The customer complains that files sometimes appear and disappear from the shared folder. Which of the following statements best describes how to fix the problem? (Select the two best answers.)

- A. Enable encryption on the router and the clients.
- B. Encrypt the drive that has the share using EFS (Encrypting File System).
- C. Increase the level of security on the NTFS folder by changing the permissions.
- D. Change the share-level permissions on the shared folder.

Quick Answer: [204](#)

Detailed Answer: [213](#)

58. A customer is having difficulties with his hard drive, and the system

won't boot. You discover that the operating system has to be reloaded. Which of the following statements best describes how to explain this to the customer?

- A. "I need to rebuild the computer."
- B. "I need to format the hard drive and reload the software."
- C. "I need to run a bootrec /fixmbr on the computer."
- D. "I need to restore the system; data loss might occur."

Quick Answer: [204](#)

Detailed Answer: [213](#)

59. Which of the following commands makes a duplicate of a file?

- A. Move
- B. Copy
- C. Dir
- D. Ls

Quick Answer: [204](#)

Detailed Answer: [213](#)

60. Which of the following is the correct sequence to install a keyboard layout in Windows 7?

- A. Control Panel> Display
- B. Control Panel > Region and Language > Keyboards and Languages > Change Keyboards
- C. Control Panel > Languages and Region > Personalization
- D. Control Panel> Region and Language> Change Keyboard

Quick Answer: [204](#)

Detailed Answer: [213](#)

61. Which tool in Windows enables a user to easily see how much memory a particular process uses?

- A. System Information Tool
- B. Registry
- C. Task Manager
- D. Performance Monitor

Quick Answer: [204](#)

Detailed Answer: [213](#)

62. Windows was installed on a computer with two hard drives: a C: drive and a D: drive. Windows is installed to C:, and it works normally. The user of this computer complains that his applications are drive intensive and that they slow down the computer. Which of the following statements best describes how to resolve the problem?

- A. Move the paging file to the D: drive.
- B. Reinstall Windows on the D: drive rather than on the C: drive.
- C. Defrag the D: drive.
- D. Decrease the paging file size.

Quick Answer: [204](#)

Detailed Answer: [213](#)

63. Which of the following tools should be used to protect a computer from electrostatic discharge (ESD) while you are working inside it?

- A. Multimeter
- B. Crimper
- C. Antistatic wrist strap
- D. PSU tester

Quick Answer: [204](#)

Detailed Answer: [214](#)

64. You are running some cable from an office to a computer located in a warehouse. As you are working in the warehouse, a 55-gallon drum falls from a pallet and spills what smells like ammonia. Which of the following statements best describes the first step you should take in your efforts to resolve this problem?

- A. Call 911.
- B. Call the building supervisor.
- C. Get out of the area.
- D. Save the computer.

Quick Answer: [204](#)

Detailed Answer: [214](#)

65. While you are upgrading a customer's server hard drives, you notice looped network cables lying all over the server room floor. Which of the following statements best describes how to resolve this issue?

- A. Ignore the problem.
- B. Call the building supervisor.
- C. Tell the customer about safer alternatives.
- D. Notify the administrator.

Quick Answer: [204](#)

Detailed Answer: [214](#)

66. Which of the following statements best describes the recommended solution for a lithium-ion battery that won't hold a charge any longer?

- A. Throw it in the trash.
- B. Return it to the battery manufacturer.
- C. Contact the local municipality and inquire as to their disposal methods.
- D. Open the battery and remove the deposits.

Quick Answer: [204](#)

Detailed Answer: [214](#)

67. Which of the following statements is *not* assertive communication?

- A. "I certainly know how you feel—losing data is a terrible thing."
- B. "Could you explain again exactly what you would like done?"
- C. "Do your employees always cause issues on computers like these?"
- D. "What can I do to help you?"

Quick Answer: [204](#)

Detailed Answer: [214](#)

68. A customer has a malfunctioning PC, and as you are about to begin repairing it, the customer proceeds to tell you about the problems with the server. Which of the following statements best describes how to respond to the customer?

- A. "Wait until I finish with the PC."
- B. "I'm sorry, but I don't know how to fix servers!"
- C. "Is the server problem related to the PC problem?"
- D. "I have to call my supervisor."

Quick Answer: [204](#)

Detailed Answer: [214](#)

69. Which of the following could be described as the chronological paper trail of evidence?

- A. First response
- B. Chain of custody
- C. Setting and meeting expectations
- D. Data preservation

Quick Answer: [204](#)

Detailed Answer: [214](#)

70. Which of the following statements best describes how what *not* to do when moving servers and server racks?

- A. Remove jewelry.
- B. Move a 70-pound wire rack by yourself.
- C. Disconnect power to the servers before moving them.
- D. Bend at the knees and lift with your legs.

Quick Answer: [204](#)

Detailed Answer: [214](#)

71. Active communication includes which of the following?

- A. Filtering out unnecessary information
- B. Declaring that the customer doesn't know what he or she is doing
- C. Clarifying the customer's statements
- D. Mouthing off

Quick Answer: [204](#)

Detailed Answer: [214](#)

72. You are troubleshooting a tablet PC that has a frozen application.

You have attempted to end the underlying task of the application but have not succeeded. Which of the following statements best describes the next recommended course of action?

- A. Hard reset
- B. Force quit the app
- C. Soft reset

- D. Bring the tablet to an authorized service center

Quick Answer: [204](#)

Detailed Answer: [215](#)

- 73.** Which of the following statements best describes the first course of action to removing malware?

- A. Identify malware symptoms.
- B. Quarantine infected systems.
- C. Disable System Restore.
- D. Remediate infected systems.
- E. Schedule scans and run updates.
- F. Enable System Restore.
- G. Educate the end user.

Quick Answer: [204](#)

Detailed Answer: [215](#)

- 74.** A customer reports that an optical drive in a PC is no longer responding. Which of the following statements best describes the first question you should ask the customer?

- A. “What has changed since the optical drive worked properly?”
- B. “Did you log in with your administrator account?”
- C. “What did you modify since the optical drive worked?”
- D. “Have you been to any inappropriate websites?”

Quick Answer: [204](#)

Detailed Answer: [215](#)

- 75.** A co-worker is traveling to Europe and is bringing her desktop computer. She asks you what *safety* concerns there might be. Which of the following statements best describes how to respond to the customer?

- A. Advise her that the computer is not usable in other countries.
- B. Advise her to check for a compatible power adapter for that country.
- C. Advise her to use a line conditioner for the correct voltage.
- D. Advise her to check the voltage selector on the power supply.

Quick Answer: [204](#)

Detailed Answer: [215](#)

76. After removing malware/spyware from a customer's PC for the third time, which of the following steps should be taken next?

- A. Tell him you can't fix the system again.
- B. Do nothing; the customer pays every time.
- C. Show him how to avoid the problem.
- D. Change his user permissions.

Quick Answer: [204](#)

Detailed Answer: [215](#)

77. Which of the following is the most important consideration when installing Windows 7 Ultimate 64-bit?

- A. Memory type
- B. Processor speed
- C. Memory speed
- D. Processor type

Quick Answer: [204](#)

Detailed Answer: [215](#)

78. You are asked to fix a problem with a customer's Active Directory Domain Services domain controller that is outside the scope of your knowledge. Which of the following statements best describes the recommended course of action?

- A. Learn on the job by trying to fix the problem.
- B. Tell the customer that the problem should be reported to another technician.
- C. Assure the customer that the problem will be fixed very soon.
- D. Help the customer find the appropriate channels to fix the problem.

Quick Answer: [204](#)

Detailed Answer: [215](#)

79. When working on a computer, which of the following should be disconnected to prevent electrical shock? (Select the two best answers.)

- A. Printer

- B.** Mouse
- C.** Telephone cord
- D.** Power cord

Quick Answer: [204](#)

Detailed Answer: [216](#)

80. You are troubleshooting a Windows Server 2012 computer that you have little knowledge about. The message on the screen says that there is a “DHCP partner down” error. There are no other technicians available to help you and your manager wants the server fixed ASAP or you are fired. Which of the following statements best describes the recommended course of action? (Select the two best answers.)

- A.** Identify the problem.
- B.** Escalate the problem.
- C.** Establish a plan of action.
- D.** Call tech support.
- E.** Verify full system functionality.
- F.** Test the theory to determine cause.

Quick Answer: [204](#)

Detailed Answer: [216](#)

Quick-Check Answer Key

- 1.** A
- 2.** D
- 3.** B
- 4.** B
- 5.** B
- 6.** C
- 7.** D
- 8.** A, D
- 9.** C
- 10.** A
- 11.** C
- 12.** B
- 13.** C, D

- 14. B
- 15. D
- 16. C
- 17. C
- 18. A
- 19. C
- 20. C
- 21. D
- 22. B
- 23. D
- 24. D
- 25. C, D
- 26. C
- 27. A, C
- 28. B, D
- 29. B
- 30. A
- 31. D
- 32. C
- 33. C
- 34. D
- 35. A
- 36. D
- 37. C, D
- 38. D
- 39. B, C
- 40. D
- 41. A
- 42. A, C
- 43. B
- 44. D
- 45. B
- 46. C

- 47. D
- 48. B
- 49. C
- 50. A, D
- 51. D
- 52. B
- 53. A
- 54. A
- 55. C
- 56. A
- 57. A, C
- 58. D
- 59. B
- 60. B
- 61. C
- 62. A
- 63. C
- 64. C
- 65. C
- 66. C
- 67. C
- 68. C
- 69. B
- 70. B
- 71. C
- 72. C
- 73. A
- 74. A
- 75. D
- 76. C
- 77. D
- 78. D
- 79. C, D

80. A, D

Answers and Explanations

- 1. Answer: A.** You would question the user during step 1 of the CompTIA A+ troubleshooting process: Identify the problem. Also during that step you would identify user changes and perform backups. Afterward, you move on to step 2: Establish a theory of probable cause. Next, it's step 3: Test the theory to determine cause. And after that is step 4: Establish a plan of action to resolve the problem and implement the solution. Next is step 5: Verify full system functionality and, if applicable, implement preventive measures. Finally, step 6: Document findings, actions, and outcomes.
- 2. Answer: D.** Msconfig enables you to modify the startup selection. You can boot the computer in different modes with Msconfig. You can also enable and disable services. The Task Manager gives you a snapshot of your system's performance and allows you to shut down applications (tasks) or processes, even if the application is hanging or frozen. Windows RE is the Windows Recovery Environment, a special repair environment which is used to fix issues in the operating system. From here, you can fix system file issues and repair the MBR and boot sector. Safe Mode is one of the options in the Advanced Boot Options Menu (ABOM). It starts the computer with a basic set of drivers, so that you can troubleshoot why devices have failed. It is also instrumental when dealing with viruses.
- 3. Answer: B.** Always check whether there are backups and physically inspect and verify the backup before changing out any drives. Making sure that a backup is available is the first order of business. After the backup has been taken care of, you can have the customer give you the password to log in (or let the customer log in) and find out which version of Windows Server is running.
- 4. Answer: B.** By rolling back the driver (which is done in the Device Manager) while in Safe Mode, you can go back in time to the old working video driver. The Windows Recovery Environment might help (for example if you used System Restore), but is not the best answer. Reinstalling the OS would wipe the partition of the president's data (and probably wipe you of your job). Directory Services Restore mode (although listed in the Advanced Startup Options in Windows 7/Vista) is only for Windows Server domain controllers. Note that Last Known Good configuration would

probably be able to help you, but not in all cases, and won't be seen by default in Windows 8.

5. Answer: B. The DxDiag utility is used to analyze a video card and check if drivers are digitally signed. It can be accessed by going to Run and typing dxdiag. The Device Manager is used to install drivers for devices. Services.msc is the console window where you can start and stop and enable/disable services such as the Print Spooler. USMT stands for User State Migration Tool, a command-line tool used to migrate user files and settings from one or more computers.

6. Answer: C. The application dock in Windows 7 is not available in Vista. The application dock is an enhanced version of the taskbar. With this, you can hover over applications that are running in the taskbar and view their current statuses (for example, if you have a video running in IE or are downloading something). You can also click and drag applications to and from the dock and close apps if you wish. Docking applications is fairly standard practice nowadays, and several other operating system manufacturers have similar functionality. User Account Control (UAC) and Aero are available in both Windows Vista and Windows 7. The sidebar is available only in Vista; it houses gadgets. However, the use of gadgets is not recommended because they pose a major security risk.

7. Answer: D. Remember that %systemroot% is a variable. It takes the place of whatever folder contains the operating system. This will usually be Windows. For example, if you were to run a default installation of Windows 7, the path to the Registry hives would be C:\Windows\System32\Config. The main hives are SAM, SECURITY, SOFTWARE, SYSTEM, and DEFAULT. These are accessed and configured by opening the Registry Editor (Run > regedit.exe) and opening the HKEY_LOCAL_MACHINE subtree. Other hive information is stored in the user profile folders.

8. Answer: A and D. In the command line, this service is simply known as Spooler. Type net stop spooler and net start spooler to restart the service. In Computer Management, the Print Spooler service is found in Services and Applications > Services. Or you could open the Run prompt and type services.msc. From there you can start, stop, pause, resume, or restart services and also set their Startup type to Automatic, Manual, or Disabled.

9. Answer: C. The convert command turns a FAT32 drive into a

NTFS drive without data loss, allowing for a higher level of data security. The proper syntax is `convert volume /FS:NTFS`.

10. Answer: A. By installing a driver that is not signed by Microsoft, you are risking instability of the operating system. The driver has no effect on files or drive fragmentation. It is extremely uncommon for a driver to cause physical damage to a device. Note that Windows 8 and newer have driver signature enforcement enabled by default, so it becomes more difficult to install unsigned drivers.

11. Answer: C. `Regedit` can be used to view startup programs. This is the executable that opens the Registry Editor. A common place to find some of the startup programs is the path `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Run`. There are several other subkeys, mostly within the `CurrentVersion`, that also house startup program information. `Ipconfig` shows the network configuration of all network adapters. `Ping` is used to test if other computers on the network can respond to TCP/IP packets of information, thus proving they are functional. `DxDiag` is used to analyze video cards and the version of DirectX that is running.

12. Answer: B. Use `defrag.exe -f`. You need to have 15 percent free space on your partition to defrag it in the Disk Defragmenter GUI-based utility. In the scenario, Tom would need 30 GBs free on the 200 GB drive. However, you can force a defrag on a partition even if you don't have enough free space by using the `-f` switch in the command-line. (`-f` may not be necessary in some versions of Windows.) The `-v` switch gives you verbose (or wordy) output. The `-a` switch gives analysis only and does not perform any defragmentation.

13. Answer: C and D. To make a secure connection, you first need to know the service set identifier (SSID) of the AP and then the encryption being used (for example, WPA or WPA2). The SSID takes care of the "connection" portion, and the encryption takes care of the "secure" portion. After all computers are connected, consider disabling the SSID for increased security. Knowing the wireless standard being used can help you verify whether your computer is compatible (802.11ac, n, or g), but the brand of access point isn't really helpful.

14. Answer: B. `SYSPREP` is one of the utilities built in to Windows for image deployment over the network. `GHOST` and `Image Clone` are

third-party offerings. XCOPY copies entire directories (in the same physical order, too) but not from one system to another (you would need its successor Robocopy for that). SYSPREP preps the system to be moved as an image file.

15. Answer: D. If the computer fails and cannot recover, you usually see some type of critical or stop error. At this point, you must restart the computer to get back into the operating system (unless it is configured to do so automatically, which is the default setting in Windows 8/7/Vista). The reason for the physical dump of memory is for later debugging. The physical dump writes the contents of memory (when the computer failed) to a file on the hard drive. Missing drivers will not cause this error, but a failed driver might. If the wrong processor is installed, you can probably not get the system to boot at all. Shutting down the computer improperly just means that the computer recognizes this upon the next reboot and asks whether you want to go into Safe Mode (in Windows 7/Vista), or it might attempt to automatically fix errors if any occurred (especially in Windows 8 and newer).

16. Answer: C. Session hijacking is when an unwanted mediator takes control of the session between a client and a server (for example, an FTP or HTTP session). DDoS is a distributed denial-of-service attack, an attack perpetuated by hundreds or thousands of computers in an effort to take down a single server; the computers, individually known as zombies, are often unknowingly part of a botnet. A smurf attack is a type of denial-of-service attack that relies on the use of many ping echoes. Malicious software is any compromising code or software that can damage a computer's files; examples include viruses, spyware, worms, rootkits, ransomware, and Trojans.

17. Answer: C. Bootrec /rebuildbcd attempts to rebuild the boot configuration store. Bootrec /fixboot is one of the methods you can try to repair bootmgr.exe in Windows. Bootrec /fixmbr rewrites the master boot record in a Windows system that has an MBR-based hard drive (won't affect a GPT-based drive). Boot\bcd is where the boot configuration store is located.

18. Answer: A. The drive should be completely erased with bit-level erasure software. Formatting is not enough, because data remanence (residue) is left on the drive from which files can be reconstructed by smart people with some smart software. It is a waste of time to install AV software on a drive *before* removing it. However, AV software

should be loaded up when the new drive is installed.

19. Answer: C. Patch management is the patching of many systems from a central location. It includes the planning, testing, implementing, and auditing stages. There are various software packages you can use to perform patch management. Windows Server Update Services (WSUS) is an example of Microsoft patch management software. Other Microsoft examples include the System Center Configuration Manager (SCCM) and its predecessor Systems Management Center (SMS), but there are plenty of third-party offerings as well. A host-based firewall is a software firewall that is loaded on a computer to stop attackers from intruding on a network. Application baselining is the performance measurements of an application over time. Virtualization is when an operating system is installed to a single file on a computer. Often, it runs virtually on top of another OS.

20. Answer: C. Establish a plan of action to resolve the problem and implement the solution is the next step after determining the cause, or more specifically: Test the theory to determine cause. It is step four of the six-step CompTIA A+ troubleshooting process. Document findings, actions, and outcomes is the sixth and last step. Verify full system functionality and, if applicable, implement preventative measures is the fifth step. Question the user and identify user changes is part of the first step: Identify the problem.

21. Answer: D. Windows 8's File History utility (accessible in the Control Panel) enables a user to back up files or the entire PC. It is the successor to Windows 7's Backup and Restore which is the successor to Windows Vista's Backup Status and Configuration. Time Machine is the backup program that is built into OS X.

22. Answer: B. Windows 7 (and Windows 8) requires a *minimum* processor frequency of 1 GHz. Windows Vista requires 800 MHz. 2 GHz is not a valid answer for Windows as of the writing of this book. 2 GB is the minimum RAM requirement for 64-bit versions of Windows 7 and Windows 8.

23. Answer: D. An unattended installation of Windows requires an answer file. This file (normally named unattend.xml) can be created by using the Windows System Image Manager (Windows SIM) program. Unattended installations can be done locally or as part of a network installation using Windows Deployment Services (WDS) in Server 2008 or higher. Drive image installations use third-party

programs such as Ghost or work with a System Restore image created within Windows. Local installation from USB is possible if you copy the Windows .iso file to the USB flash drive (if the drive is big enough) and obtain the USB/DVD download tool from the Microsoft website. A multiboot installation means that more than one operating system are being installed to the same drive. One or both of these could possibly be unattended installations. Remember that with multiboot installs, each OS should inhabit its own primary partition.

24. Answer: D. Windows Vista installations require a minimum of 15 GB free space on a 20 GB partition. The important amount to remember for the exam is the free space necessary.

25. Answers: C and D. Windows 8 32-bit installations require a minimum of 16 GB free space. 64-bit installations require 20 GB free space. The same goes for Windows 7.

26. Answer: C. The Notification Area includes the clock and programs that run behind the scenes without user intervention. The Quick Launch area houses shortcuts to files and applications. The taskbar consists of programs that are currently running, the Start button, the Quick Launch, and the Notification Area. The desktop is the area of the GUI that has a wallpaper or background, although some users refer to the entire display as the desktop. Note that Windows 8 includes a separate GUI screen called the Start screen in addition to the desktop.

27. Answers: A and C. Programs can be run in elevated mode (as an administrator) in Windows 7/Vista by following the path Start > All Programs > Accessories, then right-clicking the program and selecting Run as Administrator or by using the search field to run the program and pressing Ctrl+Shift+Enter instead of just Enter. The second option works in Windows 8 also. Plus, in Windows 8.1 you can right-click the Start button and select Command Prompt (admin).

28. Answers: B and D. Windows 8 Pro and Enterprise allow for the joining of domains. Windows 8 standard does not. Ultimate is the name used with the most powerful edition of Windows 7 (and Windows Vista).

29. Answer: B. You should recommend that the user add the senders to the junk e-mail sender list. This blocks that sender's e-mail address (or the entire domain can be blocked). However, this could take a lot of time; another option is to increase the level of security on the

spam filter within the e-mail program. Any further spam can then be sent to the junk e-mail sender list. Users need their e-mail accounts, and creating a new one can result in a lot of work for the user. Finding a new ISP is overreacting a bit; plus the user has no idea if one ISP will be better at stopping spam than another. Never tell a user to reply to spam. Spam e-mails should be sent to the spam folder and never replied to—unless you want ten times the amount of spam.

30. Answer: A. To turn off devices after a specified period of time in Windows 8/7/Vista, access Control Panel > Power Options. Then click Change Plan Settings for the appropriate power plan. Display Properties allows you to modify things such as screen resolution. Computer Management is the most used console window in Windows 7/Vista; it includes the Event Viewer, Disk Management, and Services. The Task Manager is used to analyze system resources and end tasks (among other things).

31. Answer: D. The Ports tab is where you can find how the printer is connected to the computer. This can be a USB, COM, LPT, or TCP/IP port. The Sharing tab allows you to share a locally connected (or remotely controlled) printer on the network. The Advanced tab has options such as print spooling and printer pooling. The Separator page button allows you to configure a page that is inserted after every print job.

32. Answer: C. The test page verifies connectivity and gives you insight as to possible application problems at the computer that is attempting to print. In this case, you aren't worried about the quality of the printer output; it is the computer and the application that you are troubleshooting. Test pages are used to make sure the computer can print properly to the printer, not to initiate diagnostic routines. Those would be initiated from the built-in display and menu on the printer, or in Windows by right-clicking the printer, selecting Printer properties, and then selecting Print Test Page. Printing a test page does not clear the print queue or reset printer memory. This would have to be done at the printer and/or at the computer controlling the printer.

33. Answer: C. The drive is fragmented. This is why it is very slow in its reaction time. It's also possible that the OS is infected with a virus. You should analyze and defragment the drive and run an AV sweep of the system. If a drive is not seen by Windows, it might

have to be initialized; this can happen when you add a second drive to a system that already has Windows installed. Surplus temporary files might slow down the login process but shouldn't slow the hard drive when opening applications. They can be removed with the Disk Cleanup program or with third-party applications. If the hard drive's SATA data connector were loose, the drive should not be able to access applications. In fact, you would probably get a message that says "Missing OS" or something to that effect.

34. Answer: D. Sanitizing the hard drive does not secure a computer workstation. It does, however, prevent anyone from accessing data on the drive, but it also ensures the computer workstation won't be functional anymore. A data sanitization method is the specific way in which a data destruction program or file shredder overwrites the data on a hard drive or other storage device. Setting strong passwords, changing default usernames, and disabling the guest account are all ways of securing a computer workstation.

35. Answer: A. Because there is only one computer, you can implement auditing only locally. This is done with the *Local* Security Policy. (This is not available in all editions of Windows.) The Group Policy Editor and AD DS are used by Windows Servers in a domain environment. Some versions of Windows have the *Local* Group Policy editor, where auditing can also be turned on. If you type `services.msc` in the Run prompt, `services.msc` will open the Services console window; services can be turned on and off and their startup type can be modified from here.

36. Answer: D. Device drivers are the connection between the operating system and the device itself. It is a program that makes the interaction between the two run efficiently. It simplifies programming by using high-level application code. The best device drivers come from the manufacturer of the device. They are the ones who developed the device, so it stands to reason that their code would be the most thoroughly tested and debugged.

37. Answers: C and D. To protect the computer, it is important to enable the Windows Firewall (if it is not enabled by default) or make sure that a third-party firewall is installed and running properly. Windows Update will download the latest security patches for Windows. After a routine installation of Windows, this first Windows update could be time-consuming. It is not recommended to connect to WLANs (wireless networks) before running Windows

Update and enabling the firewall.

- 38. Answer: D.** After a restore point is made, it is stored in the System Volume Information folder. To view this folder, you must log on as an administrator, show hidden files and folders, and then assign permissions to the account that wants to view that folder.
- 39. Answers: B and C.** Shoulder surfing and tailgating are both types of social engineering. A shoulder surfer is someone who attempts to view information on a person's desk or display without the person's knowledge. Tailgating is when a person attempts to gain access to a secure area by following closely on the heels of another employee, usually without his knowledge. A rootkit is a program that is designed to gain administrator level access to a computer. It is a type of malicious software abbreviated as malware.
- 40. Answer: D.** The Print Spooler controls the queue and the printing of documents. The printer is the physical printing device; Microsoft also refers to the print driver software as the printer. A print server is a device that controls one or more printers; it is usually connected to the network. Print pooling is when two or more printers are grouped together so that a user's document will print faster: if one printer is occupied, the other takes over.
- 41. Answer: A.** Magnetically erase the drive. Degaussing the drive is an excellent way to remove all traces of data, but only if the drive is electromagnetic! Formatting the drive is not enough due to the data residue that is left behind. Running bootrec /fixmbr will rewrite the master boot record of the hard drive (not applicable if a GPT drive) but the data remains. Converting the drive from FAT to NTFS (with the convert command) keeps the data intact.
- 42. Answers: A and C.** If the WAP/router was reset, any security settings that you originally set up are most likely gone. If you backed up the settings previously, you could restore them. Either way, some type of encryption protocol is necessary. The passphrase or network key generated by the WAP/router needs to be installed on each client before it can be recognized on the network. This passphrase/key should be kept secret, of course. After all the clients have been associated with the WAP/router, disable SSID broadcasting so that no one else can "see" the router (without more advanced software).
- 43. Answer: B.** The tech should escalate the call to another technician. This is exactly why help desks are configured in groups: Level 1, Level 2, and the masters (Level 3), and possibly beyond! Don't try to

be a superhuman. In technology there is always someone who knows more than you about a specific subject. Route the call to the next level tech and let the customer know that you are doing so. Good help desks are set up in such a way so someone is always available. Every problem can be resolved! It's just a matter of knowledge and persistence. (Remember that when you take the real exams.) Don't try to fix the problem regardless of the time necessary. Your time, and the customer's time, is very valuable. Escalate, so that you, your organization, and the customer can approach and solve the problem efficiently.

- 44. Answer: D.** The computer might need a special keystroke, a press of the power button, or just a little more time to come out of Hibernation mode. Remember, check the simple, quick solutions first because they are usually the culprits. Booting into Safe Mode, reinstalling video drivers, and replacing the inverter are all quite time-consuming, but, if necessary, should be attempted in that order —after checking the power state.
- 45. Answer: B.** The SCSI hard drive is the most likely answer. SCSI hard drives and RAID controllers will need special drivers during the installation process of Windows if they are not recognized automatically. Click the option for loading third-party drivers when the installation begins. Optical drives and USB devices do not require third-party drivers. The BIOS/UEFI doesn't use a driver; it is firmware.
- 46. Answer: C.** A Windows 8 computer in a Windows workgroup can have 20 maximum concurrent connections to it over the network. If you need more, you will want to consider a Microsoft Domain.
- 47. Answer: D.** Megan shouldn't do anything. As a technician, you should fix the problem. The issue is that she needs to obtain an IP address through DHCP when on the road. But setting the network adapter to obtain an IP address automatically is not enough. In order to connect to the internal company network, the Alternate Configuration tab must be configured as a "User Configured" static IP address. This solution enables Megan to connect to networks while on the road by obtaining IP addresses automatically and allows her to connect to the internal company network with the static IP address.
- 48. Answer: B.** Most of the time you should perform a backup of data before making changes to a system or implementing a solution. It's

not always necessary—for example, if a network cable was unplugged or a disc is stuck in the DVD-ROM drive. But if you need to make changes to the OS, you should perform a backup. It is part of step 1 of the six-step troubleshooting process: Identify the problem. Verifying full system functionality is otherwise known as testing the solution, which is part of step 5. Documenting the solution is part of step 6: Document findings, actions and outcomes.

49. Answer: C. Hibernate mode saves all the contents of RAM (as hiberfil.sys in the root of C:) and then shuts the system down so that it is using virtually no power. To reactivate the system, you must press the power button. At that point, the entire session is loaded from RAM and you can continue on with the session. Standby and suspend modes turn off the hard drive and display and throttle down the CPU and RAM, but they still use power, and although these power modes use less power than the computer being powered on, altogether they end up using much more power than Hibernate mode does. Shutdown is great for power savings, but the session is lost when the computer is shut down.

50. Answers: A and D. NTFS can use NTFS file-level security, whereas FAT32 cannot. NTFS cluster sizes are smaller than FAT32 clusters. NTFS partitions are therefore more efficient (when installed correctly) than FAT32 partitions. NTFS can create larger partitions (or logical drives) than FAT32 in general.

51. Answer: D. A switch (aka option) alters the action of the command but not by forcing it to perform unrelated actions. The switch works only at the current time within the operating system you are currently using, so “work across any operating system” doesn’t make sense in this scenario. Switches are not used in application icons. They are used within commands—for example, `dir /p`, which would display directory contents by the page.

52. Answer: B. You should boot the system to the Advanced Boot Options Menu (ABOM) in Windows 7/Vista, and select Last Known Good Configuration. This will revert the system back to the last known good as long as someone has not logged in successfully to the computer. If, however, that didn’t work, you could try booting into Safe Mode (also in the ABOM) and perform a System Restore (or restore from the DVD Windows RE). After you have exhausted all possibilities, try a factory restore or reinstall the OS.

53. Answer: A. The Event Viewer contains the log files of all the errors

that occur on the machine. In this case, you would go to the Application log. Another common log is the System log, which shows errors concerning the OS and drivers. Local Security Policy is where you can set up auditing and create password policies for the computer. Msconfig enables you to boot the computer in different modes and enable/disable services and applications. sfc /scannow is a command run in the Command Prompt (as an administrator only) that scans the integrity of the protected system files and repairs them if possible.

54. Answer: A. The msconfig utility enables you to modify the startup environment via the General, boot, and Startup tabs (in Windows 7/Vista), and the General and Boot tabs (in Windows 8). Ipconfig displays all network adapters' settings. The Boot Config Editor is BCDEdit; it is used to modify the Boot Configuration Data (BCD) store. You might need to modify this if you are trying to dual-boot a computer. The Registry Editor allows you to make changes to Windows by accessing various hives of information and individual entries. Although the BCDEdit and Registry Editor utilities might be able to modify some startup features, they are not "commands" and are used for more advanced and less frequently used modifications than msconfig.

55. Answer: C. The application log in the Event Viewer displays errors concerning Windows applications as well as third-party applications. The security log shows auditing events. The system log shows events concerning system files, drivers, and operating system functionality. Setuperr.log is a log file that is created during the installation of Windows. If it is created, it is stored in %windir%\Panther and is not within the Event Viewer.

56. Answer: A. Disabling the SSID broadcast is a security precaution, but it only keeps out the average user. Any attacker with two bits of knowledge can scan for other things the wireless access point broadcasts. Interestingly, using WEP is considered more secure than not using it and disabling the SSID. RADIUS is an external method of authenticating users; it often requires a Windows Server. WPA2 is very secure; if you had one security option you could enable, make it WPA2.

57. Answers: A and C. Use WPA or WPA2 on the router (and clients) to deny wardrivers and other stragglers access to the customer's network. Increase the level of NTFS security by changing the

permissions in the Security tab of the shared folder. EFS isn't necessary if you set up WPA2 on the wireless access point, but if you are dealing in seriously confidential information, you might consider it as well. Here's the deal: Share-level permissions are rarely modified. NTFS permissions take precedence and are more configurable, so that is where the bulk of your time configuring permissions will go.

- 58. Answer: D.** Always explain specifically and exactly what you must do and what the ramifications are. Try to avoid technical acronyms or jargon, and make sure the customer is fully aware of the situation.
- 59. Answer: B.** Copy is used to make a duplicate of the file in another location. Move enables you to take a file and shift it to another location. Dir gives you the contents of a specific folder. Copy, move, and dir are Windows commands. Ls will list the directory contents on a Linux-based system.
- 60. Answer: B.** Start > Control Panel > Region and Language > Keyboards and Languages > Change Keyboards is the correct sequence. The Display option has no settings for keyboards. It is called Region and Language, not Languages and Region. You click the Change Keyboard button after accessing the Keyboards and Languages tab, a key step. These answers all assume that you are in icons mode (Large icons or Small icons) in the Control Panel.
- 61. Answer: C.** The Task Manager enables a user to see the amount of memory and the percentage of processing power a particular process uses in real-time. This can be done on the Processes tab. System Information gives you information about the hardware and software of the computer, but it is static (text only) and doesn't change in real-time. The registry stores all of the settings of Windows and is modified with the Registry Editor. Performance Monitor can graph the performance of the different components in the computer and, if configured properly, can do the same thing as the Task Manager in this scenario, but not as easily.
- 62. Answer: A.** By moving the paging file (or swap file, aka virtual memory) to the D: drive, you are freeing up C: to deal with those drive-intensive programs. Reinstalling Windows is a huge process that you should avoid at all costs, especially when unnecessary, such as in this example. Defragging the C: drive would help if that is where the OS and applications are, but defragging the D: drive will not speed up the applications. Decreasing the page file size never

helps. However, increasing the size, moving it, and adding RAM are all ways to make applications run faster.

- 63. Answer:** C. Use an antistatic wrist strap when working inside a computer to protect against electrostatic discharge (ESD). Other ways to prevent ESD include using an antistatic mat, touching the chassis of the case (self grounding), and using antistatic bags.
- 64. Answer:** C. If there is something that is immediately hazardous to you, you must leave the area right away. Afterward, you can call 911, the building supervisor, or your manager, depending on the severity of the situation. Computers and all other technology come second after human life. Remember that. Plus, if backup systems have been implemented properly, you have nothing to lose if a computer is damaged. If the situation is not an emergency, be sure to reference the material safety data sheet (MSDS) for the substance you encounter.
- 65. Answer:** C. You need to explain to the customer that there is a safer way. Cable management is very important when it comes to the safety of employees. Trip hazards such as incorrectly routed network cables can have devastating effects on a person. Never ignore the problem. It is not your place to notify the building supervisor or administrator because this is not your company. However, you might opt to tell your manager about the event. A wise consulting company wants to protect its employees and should want to know of potential hazards at customer locations.
- 66. Answer:** C. Every municipality has its own way of recycling batteries. But you should definitely recycle them and not throw them in the trash. Manufacturers probably won't be interested in batteries that won't charge any longer. It is more likely that you will recycle them. Be safe—never open a battery!
- 67. Answer:** C. Asking a customer if employees always cause issues is just plain rude; this type of communication should be avoided. However, the other three statements are positive and helpful, or at least consoling. Stay away from being judgmental of the customer.
- 68. Answer:** C. Ask if the server problem is related to the PC problem. Try to understand the customer before making any judgments about the problems. Make sure it isn't a bigger problem than you realize before making repairs that could be futile. If you find out that it is a separate problem, ask the customer which issue she would like to resolve first.

69. Answer: **B.** Chain of custody is the chronological paper trail of evidence that may or may not be used in court. First response describes the steps a person takes when first responding to a computer with prohibited content or illegal activity: it includes identifying what exactly is happening, reporting through proper channels, and preserving data and devices. Setting and meeting expectations deals with customer service; it is something you should do before you start a job for a customer. Data (and device) preservation is a part of first response; a person who first arrives at the scene of a computer incident will be in charge of preserving data and devices in their current state.

70. Answer: **B.** Don't attempt to move heavy objects by yourself. Ask someone to help you. Removing jewelry, disconnecting power, and bending at the knees and lifting with the legs are all good safety measures.

71. Answer: **C.** One example of active communication is clarifying a customer's statements. For instance, if you are unsure exactly what the customer wants, always clarify the information or repeat it back to the customer so that everyone is on the same page. Never declare that the customer doesn't know what he is doing. This is a surefire way to lose the customer and possibly your job. It should go without saying, mouthing off could be the worst thing you could do. Save that for the drive home on the freeway—I'm just kidding! Be professional at all times when working with customers, and perhaps while driving as well.

72. Answer: **C.** The next attempt you should make (from the listed answers) is a soft reset of the device. This often requires pressing a special combination of buttons. That (hopefully) restarts the device with the RAM cleared. Then you can troubleshoot the problem application further if necessary. A hard reset is not recommended (yet) because that will wipe the data, and the soft reset hasn't been attempted yet in the scenario. Force-quitting the app is the same as ending the task for the application. Always try to fix the problem yourself, and always attempt a soft reset, before bringing the device to an authorized service center.

73. Answer: **A.** The first step in the malware removal best practices procedure is to identify malware symptoms. The other steps are: 2. Quarantine infected systems; 3. Disable System Restore; 4. Remediate infected systems; 5. Schedule scans and run updates; 6.

Enable System Restore; and 7. Educate the end user.

74. Answer: A. You should first ask if anything has changed since the optical drive worked properly. Don't blame the user by asking what "you" modified; it implies that you think the user caused the issue. Always ask if anything has changed first before any other questions. Try not to accuse a user of accessing inappropriate websites because this could be considered inflammatory and harassment. Think like a robot with the single purpose of fixing the problem, but act like a professional and courteous human being!

75. Answer: D. Some power supplies have selectors for the United States and Europe (115 and 230 volts). However, your co-worker might need an adapter, too; otherwise, the plug may not fit. Newer power supplies might auto-sense the voltage. If the power supply doesn't have one of those red switches, check the documentation to see if it can switch the voltage automatically. Line conditioners simply clean the power for a specific voltage. If your circuit has dirty power (for example, it is fluctuating between 113 and 130 volts), a line conditioner will keep it steady at 120 volts.

76. Answer: C. Teach the user how to avoid this problem by recommending safe computing practices. The customer will then be more likely to come back to you with other computer problems.
‘Nuff said.

77. Answer: D. The most important consideration when installing any 64-bit operating system is the processor type. The CPU needs to be 64-bit to run 64-bit Windows. 32-bit CPUs will not run 64-bit Windows. Yes, Windows 7 requires a 1 GHz CPU, but honestly, if you don't have that speed, then you don't have much of a computer. Memory type doesn't really matter much; if it's a PC, then the memory type should be fine. But the amount of memory is important. 1 GB is necessary for 32-bit systems, but once again, the 64-bit consideration becomes important again; 64-bit versions of Windows 7 (and Windows 8/8.1) require 2 GB RAM.

78. Answer: D. Make sure that the customer has a path toward a solution before dismissing the issue. Do *not* try to fix the problem if the scope of work is outside your knowledge. Most PC technicians will not work on domain controllers because they are advanced Microsoft servers that are used in client/server networks.

79. Answers: C and D. The power cord carries 120 volts at 15 amps or 20 amps, and the telephone cord carries 80 volts when it rings. It is

important to disconnect these before servicing a computer. Now, if you were opening the computer, you would disconnect everything. However, you might be fixing something that doesn't require you to open the computer—for example, connecting a network cable. Remember to always disconnect any power, data, or telecommunications cables before working on the system.

80. Answers: A and D. You should attempt to identify the problem and call Microsoft tech support (or contact them in another manner). The message tells you that the DHCP partner is down. This means that there are two DHCP servers, one acting as a failover. As part of your identification of the problem you should access the TechNet (for example: <https://technet.microsoft.com/en-us/library/dn338985.aspx>). You will find out more about the problem, and possibly learn that it isn't as bad as it might seem, and your manager might be over-reacting slightly (these things happen). In reality, this message means that the partner DHCP server is down, but the one you are working at locally is still functional and is responding to all DHCP requests. You should indeed fix the problem of course, but now you can call Microsoft tech support in a methodical and calm way, armed with what you think the problem is. When a company purchases a Windows Server 2012 operating system, it comes with tech support, either from Microsoft, or from the company that built the server. Because your knowledge of Windows Server 2012 is limited, tech support is a great way to not only fix the problem, but also learn a thing or two from the people that work with the system all the time. Escalating the problem is impossible because there are no other technicians available to help you. The other answers refer to the CompTIA troubleshooting process, none of which you should attempt until you have called tech support. Now, if your knowledge of Windows Server 2012 was sufficient, then you could attempt to solve the problem yourself.

Chapter Ten. 220-902 Practice Exam C

Let's turn up the heat a bit more. The previous 220-902 exam was the intermediate test. This next test could be considered an advanced practice test. A large percentage of the questions have a higher difficult rating. Be ready for questions with longer, more in-depth scenarios and more complex answers. This exam is freestyle, meaning the questions are randomized. You can expect questions from any of the five domains, in any order.

If you didn't already, I suggest taking a break between exams. If you just completed the second exam, give yourself a half-hour or so before you begin this one. If you didn't score 90 percent or higher on exam B, go back and study; then retake exam B until you pass with 90 percent or higher.

Write down your answers and check them against the Quick-Check Answer Key, which immediately follows the exam. After the answer key you will find the explanations for all of the answers. Good luck!

Practice Questions

1. Which of the following protects confidential information from being disclosed publicly?

- A. Classification
- B. Social engineering
- C. RAS
- D. Hard drive wipe

Quick Answer: [236](#)

Detailed Answer: [237](#)

2. Programs that run when Windows starts are stored in which of the following registry hives?

- A. HKEY_CURRENT_CONFIG
- B. HKEY_USERS
- C. HKEY_LOCAL_MACHINE
- D. HKEY_CLASSES_ROOT

Quick Answer: [236](#)

Detailed Answer: [237](#)

3. Typically, which of the following Windows tools enables you to *configure* a SOHO router?

- A. Internet Explorer
- B. Device Manager
- C. Msconfig
- D. Windows Explorer/File Explorer

Quick Answer: [236](#)

Detailed Answer: [237](#)

4. Which of the following steps is performed first when running a clean install of Windows Professional on a new hard drive?

- A. Format the partition.
- B. Partition the drive.
- C. Configure Windows settings.
- D. Load RAID drivers.

Quick Answer: [236](#)

Detailed Answer: [237](#)

5. A co-worker maps a network drive for a user, but after rebooting, the drive is not seen within Explorer. Which of the following steps should be taken first to ensure that the drive remains mapped?

- A. Check Reconnect at Logon when mapping the drive.
- B. Select the drive letter needed to connect each time the co-worker logs on.
- C. Check the Folder connection when mapping the drive.
- D. Use the `net use` command instead.

Quick Answer: [236](#)

Detailed Answer: [237](#)

6. Based on the physical hardware address of the client's network device, which of the following is commonly used to restrict access to a network?

- A. WPA key
- B. DHCP settings
- C. MAC filtering
- D. SSID broadcast

Quick Answer: [236](#)

Detailed Answer: [237](#)

7. A print job fails to leave the print queue. Which of the following services may need to be restarted?

- A.** Print driver
- B.** Print Spooler
- C.** Network adapter
- D.** Printer

Quick Answer: [236](#)

Detailed Answer: [238](#)

8. After installing a network application on a computer running Windows, the application does not communicate with the server. Which of the following actions should be taken first?

- A.** Uninstall the service pack.
- B.** Reinstall the latest security update.
- C.** Add the port number and name of the service to the Exceptions list of Windows Firewall.
- D.** Add the port number to the network firewall.

Quick Answer: [236](#)

Detailed Answer: [238](#)

9. A customer reports a problem with a PC located in the same room as cement testing equipment. The room appears to have adequate cooling. The PC will boot up but locks up after 5–10 minutes of use. After a lockup it will not reboot immediately. Which of the following statements best describes the most likely problem?

- A.** The PC has a virus.
- B.** The PC air intakes are clogged with cement dust.
- C.** The CPU heat sink is underrated for the CPU.
- D.** The power supply is underrated for the electrical load of the PC.

Quick Answer: [236](#)

Detailed Answer: [238](#)

10. When accessing an NTFS shared resource, which of the following is required? (Select the two best answers.)

- A. An active certificate
- B. Correct user permissions
- C. Local user access
- D. Correct share permissions

Quick Answer: [236](#)

Detailed Answer: [238](#)

11. Which of the following protocols should be set up in order to establish the most secure wireless connection?

- A. WEP
- B. WPA
- C. WPA2
- D. WAP

Quick Answer: [236](#)

Detailed Answer: [238](#)

12. You are contracted to recover data from a laptop. In which two locations might you find irreplaceable, valuable data? (Select the two best answers.)

- A. Ntoskrnl.exe
- B. Windows folder
- C. Pictures
- D. E-mail
- E. System32 folder

Quick Answer: [236](#)

Detailed Answer: [239](#)

13. Which utility enables auditing at the local level?

- A. Group Policy
- B. Local Security Policy
- C. Active Directory Policy
- D. Site Policy

Quick Answer: [236](#)

Detailed Answer: [239](#)

14. Which of the following statements best describes how NAT provides additional security for users who are behind a gateway?

- A. It sets the hours that users can access the Internet.
- B. It blocks computers on the Internet from accessing computers on the LAN.
- C. It limits users from accessing particular websites.
- D. It blocks computers on the LAN from accessing computers on the Internet.

Quick Answer: [236](#)

Detailed Answer: [239](#)

15. A customer plugs in a new USB barcode reader and the computer recognizes it, but the reader is unable to work properly. Which of the following statements best describes the most likely reason?

- A. Faulty USB cable.
- B. The operating system needs to be updated.
- C. Software drivers need to be updated.
- D. Too many USB devices are plugged in.

Quick Answer: [236](#)

Detailed Answer: [239](#)

16. A customer has forgotten his password. He can no longer access his company e-mail address. Which of the following statements best describes the recommended course of action?

- A. Tell him to remember his password.
- B. Ask him for information confirming his identity.
- C. Tell him that the password will be reset in several minutes.
- D. Tell him that he shouldn't forget his password.

Quick Answer: [236](#)

Detailed Answer: [239](#)

17. Which of the following can help locate a lost or stolen mobile device?

- A. Passcode
- B. Auto-erase
- C. GPS
- D. Encryption

Quick Answer: [236](#)

Detailed Answer: [239](#)

18. Which the following can be disabled to help prevent access to a wireless network?

- A.** MAC filtering
- B.** SSID broadcast
- C.** WPA2 passphrase
- D.** WPA key

Quick Answer: [236](#)

Detailed Answer: [239](#)

19. Which of the following commands sets the time on a workstation?

- A.** Time
- B.** Net time
- C.** Net timer
- D.** Net time set

Quick Answer: [236](#)

Detailed Answer: [239](#)

20. In Windows, which utility enables you to select and copy characters from any font?

- A.** Language bar
- B.** Sticky keys
- C.** Control Panel > Fonts
- D.** Character map

Quick Answer: [236](#)

Detailed Answer: [240](#)

21. Which of the following can be described as removing the limitations of Apple iOS?

- A.** Rooting
- B.** Jailbreaking
- C.** VirusBarrier
- D.** Super-admin powers

Quick Answer: [236](#)

Detailed Answer: [240](#)

22. Which of the following built-in applets should be used by a technician to configure offline files and folders in Windows?

- A. File History
- B. USMT
- C. Robust file copy
- D. Sync Center

Quick Answer: [236](#)

Detailed Answer: [240](#)

23. Which language support for representing characters is built in to Windows?

- A. Unicode
- B. EBCDIC
- C. ASCII
- D. ITU-T

Quick Answer: [236](#)

Detailed Answer: [240](#)

24. Which of the following is the best source of information about malicious software detected on a computer?

- A. Operating system documentation
- B. Anti-spyware software website
- C. Readme.txt file included with the anti-spyware software installation
- D. The user of a previously infected computer

Quick Answer: [236](#)

Detailed Answer: [240](#)

25. Viruses have been detected and removed on a customer's computer several times during the course of several weeks. Which of the following methods will best help prevent future occurrences?

- A. Delete temporary files, cookies, and browser history.
- B. Defragment the hard drive.
- C. Install antivirus software that uses manual updates.
- D. Discuss safer web browsing habits with the customer.

Quick Answer: [236](#)

Detailed Answer: [240](#)

26. Which of the following sends an invitation by e-mail asking for help?

- A. Remote Desktop Connection
- B. Service call
- C. VNC
- D. Remote Assistance

Quick Answer: [236](#)

Detailed Answer: [240](#)

27. When performing a clean installation, which of the following is the default location for the system files of Windows?

- A. C:\Windows
- B. C:\Windows\System32\Config
- C. C:\System Files
- D. C:\Windows\System32

Quick Answer: [236](#)

Detailed Answer: [241](#)

28. You are required to set up a remote backup solution for music and photos stored on an Android tablet. The files cannot be stored at any company location. Which technology should be used?

- A. iCloud
- B. Google Cloud Platform
- C. Microsoft OneDrive
- D. Local NAS device

Quick Answer: [236](#)

Detailed Answer: [241](#)

29. You need to copy and paste information from a web page, but you want to remove all formatting so that it can be pasted cleanly into Word. Which program should be used as an intermediary?

- A. CMD
- B. Excel
- C. Notepad
- D. MMC

Quick Answer: [236](#)

Detailed Answer: [241](#)

30. A computer is responding slowly and the Windows Task Manager shows that spoolsv.exe is using 95 percent of system resources.

Which of the following is most likely the cause of this problem?

- A. Windows Update is running.
- B. A virus infection has occurred.
- C. Hyper-Threading has been disabled.
- D. The printing subsystem.

Quick Answer: [236](#)

Detailed Answer: [241](#)

31. Which of the following descriptions classifies the protocol IMAP?

- A. A protocol that allows real-time messaging
- B. An e-mail protocol that allows users to selectively download messages
- C. An e-mail protocol that allows users to send but not to receive messages
- D. A protocol that authenticates users who are sending e-mail

Quick Answer: [236](#)

Detailed Answer: [242](#)

32. Which of the following is a user-defined collection of folders that acts as logical representations of the user's content?

- A. Metadata
- B. My Documents
- C. Libraries
- D. Public Documents

Quick Answer: [236](#)

Detailed Answer: [242](#)

33. From which of the following locations could you disable a hardware component on a laptop in Windows?

- A. Device Manager
- B. Task Manager
- C. Computer

D. Services console

Quick Answer: [236](#)

Detailed Answer: [242](#)

34. A customer's Android smartphone was running a third-party VNC application that froze. Which of the following statements best describes the recommended course of action? (Select the two best answers.)

- A. You should initiate a soft reset
- B. You should initiate a hard reset
- C. You should pull the battery
- D. You should remove the memory card

Quick Answer: [236](#)

Detailed Answer: [242](#)

35. Which command-line tool in Windows finds all of the unsigned drivers in the computer?

- A. sigverif
- B. dxdiag
- C. ping
- D. msconfig

Quick Answer: [236](#)

Detailed Answer: [242](#)

36. Users are reporting to you that a Windows feature asks them for confirmation before running certain applications or when making system changes. What is the name of this Windows feature, and where should you direct users to turn the functionality off?

- A. Security Center; it can be turned off in the services MMC snap in.
- B. User Account Control; it can be turned off under Security in the Control Panel.
- C. Windows Firewall; it can be turned off under System Properties.
- D. User Account Control; it can be turned off under User Accounts in the Control Panel.

Quick Answer: [236](#)

Detailed Answer: [242](#)

37. James is a LAN administrator in charge of printers. Which of the following should he check first when a Windows user is trying to print a document and gets the error message “Print sub-system not available”?

- A. Correct printer driver is installed.
- B. Printer has been added.
- C. Spooler service is running.
- D. Printer has power from the jack.

Quick Answer: [236](#)

Detailed Answer: [243](#)

38. Your manager’s Windows computer locks up after the graphical user interface starts to load up. However, the computer will boot in Safe Mode. When you access the Event Viewer, you see an entry that states that a driver failed. Which of the following steps will help you further diagnose the problem?

- A. Running sigverif.
- B. Enabling Boot Logging. Then, in Safe Mode analyze the ntbtlog.txt file.
- C. Disabling Driver Signature Enforcement.
- D. Accessing Debugging Mode.

Quick Answer: [236](#)

Detailed Answer: [243](#)

39. Which of the following commands is used to fix errors on the system disk?

- A. Xcopy
- B. Tracert /w
- C. Diskpart
- D. Chkdsk /F

Quick Answer: [236](#)

Detailed Answer: [243](#)

40. A new program is crashing and causing the computer to lock up. What is the best location to check for further information about the cause of the crash?

- A. System log
- B. Security log
- C. Application log
- D. Setup log

Quick Answer: [236](#)

Detailed Answer: [243](#)

41. Which of the following versions of Windows 7 can run in Windows XP mode, join domains, and utilize BitLocker encryption?

- A. Starter
- B. Home Premium
- C. Ultimate
- D. Professional

Quick Answer: [236](#)

Detailed Answer: [243](#)

42. A customer's computer is running Windows Vista Ultimate 32-bit. The customer would like to upgrade to Windows 7. Which of the following operating systems can the customer's computer be upgraded directly to?

- A. Windows 7 Professional 32-bit
- B. Windows 7 Professional 64-bit
- C. Windows 7 Ultimate 32-bit
- D. Windows 7 Ultimate 64-bit

Quick Answer: [236](#)

Detailed Answer: [243](#)

43. You are tasked with copying the entire Users folder and subfolders to a new computer. Which command should be used?

- A. Xcopy
- B. Expand
- C. Copy
- D. Move

Quick Answer: [236](#)

Detailed Answer: [243](#)

44. You are tasked with disabling services from starting up on a

Windows PC. Which command should be run to bring up a window to make these changes?

- A. SFC
- B. Chkdsk
- C. Msconfig
- D. gpupdate

Quick Answer: [236](#)

Detailed Answer: [244](#)

45. Which of the following is an executable that checks the integrity of an NTFS volume in Windows?

- A. SFC
- B. Autochk.exe
- C. Convert
- D. Regedit.exe

Quick Answer: [236](#)

Detailed Answer: [244](#)

46. In Windows, which of the following folders might be stored in a hidden partition by default?

- A. \Boot
- B. \Windows
- C. \Documents and Settings
- D. \Bootmgr

Quick Answer: [236](#)

Detailed Answer: [244](#)

47. One of your customers has a wireless network that is secured with WEP. The customer wants to improve data encryption so that the transmission of data has less of a chance of being compromised. Which of the following statements best describes the recommended course of action?

- A. Reconfigure the network to use WPA2.
- B. Use MAC address filtering.
- C. Modify the WEP key every week.
- D. Disable the SSID broadcast.

Quick Answer: [236](#)
Detailed Answer: [244](#)

48. Which of the following commands is used to display hidden files?

- A. dir /o
- B. dir /a
- C. dir /d
- D. dir /?

Quick Answer: [236](#)
Detailed Answer: [244](#)

49. After installing a new video card, the PC loads Windows and continuously reboots. Which of the following statements best describes the first course of action?

- A. Go into Safe Mode.
- B. Run Chkdsk.
- C. Run Msconfig.
- D. Check the System log.

Quick Answer: [236](#)
Detailed Answer: [244](#)

50. You get a complaint from a customer that her computer started receiving pop-up ads after she installed an application within Windows. Which of the following statements best describes the most likely problem?

- A. The installed application contains a logic bomb.
- B. The installed application is a worm.
- C. The installed application is a Trojan horse.
- D. The installed application included adware.

Quick Answer: [236](#)
Detailed Answer: [245](#)

51. Which of the following statements best describes how to prepare a mobile device in case it is stolen or lost? (Select the three best answers.)

- A. Disable Bluetooth.
- B. Configure remote backup.

- C. Enable Wi-Fi encryption.
- D. Enable GPS.
- E. Enable Wi-Fi tethering.
- F. Configure a pattern screenlock.

Quick Answer: [236](#)

Detailed Answer: [245](#)

52. Two co-workers share the same file inside a folder. User A works on the file, makes changes, and saves the file. User B then works on the file, makes changes, and saves the file as well. The next time User A attempts to open the file, she receives an access denied error. Which of the following statements best describes the most likely cause of this error message?

- A. The NTFS permissions were changed on the file to allow only execute.
- B. The file was set with the system and hidden attributes.
- C. The file was set to read only by the Accounts Receivable administrator.
- D. The file was moved before being modified and then moved back to the share.

Quick Answer: [236](#)

Detailed Answer: [245](#)

53. In Windows, which of the following commands should be used to verify that a previous system shutdown was completed successfully?

- A. ipconfig
- B. chkntfs
- C. chkdsk
- D. sfc

Quick Answer: [236](#)

Detailed Answer: [245](#)

54. Logging on to a network with a username and password is an example of which of the following?

- A. Authorization
- B. Identification
- C. Identity proofing

D. Authentication

Quick Answer: [236](#)

Detailed Answer: [245](#)

55. Your boss asks you to install a new wireless network. Which of the following should be implemented on the wireless network to help prevent unauthorized access? (Select the two best answers.)

- A.** Install additional wireless access points.
- B.** Use WPA2.
- C.** Broadcast the SSID.
- D.** Use MAC filtering.
- E.** Install a signal booster.

Quick Answer: [236](#)

Detailed Answer: [245](#)

56. In Windows, which of the following enables administrators to perform administrative tasks that integrate scripts over a network?

- A.** PowerShell
- B.** Command Prompt
- C.** Command-line
- D.** Windows Script Host

Quick Answer: [236](#)

Detailed Answer: [246](#)

57. Which of the following tools should be used in Windows to migrate user files and settings for multiple computers?

- A.** xcopy
- B.** Windows Easy Transfer
- C.** User State Migration Tool
- D.** Profile Transfer Tool

Quick Answer: [236](#)

Detailed Answer: [246](#)

58. Which of the following can be used to kill a running process?

- A.** Task Manager
- B.** Computer Management
- C.** Control Panel

D. Tasklist

Quick Answer: [236](#)

Detailed Answer: [246](#)

59. Which of the following file systems is suited specifically for USB flash drives?

- A.** FAT32
- B.** exFAT
- C.** NTFS
- D.** FAT16

Quick Answer: [236](#)

Detailed Answer: [246](#)

60. A program has been detected collecting information such as the computer name and IP address and sending that information to a specific IP address on the Internet. Which kind of threat is this an example of?

- A.** Spyware
- B.** Virus
- C.** Rootkit
- D.** Spam

Quick Answer: [236](#)

Detailed Answer: [246](#)

61. You are required to stop the Windows Firewall service. Which of the following statements best describes how to accomplish this?
(Select the three best answers.)

- A.** In Performance Monitor
- B.** With the net stop mpssvc command
- C.** Within Msconfig
- D.** Within the Task Manager
- E.** In System Information
- F.** With Gpedit.exe
- G.** In Services.msc

Quick Answer: [236](#)

Detailed Answer: [246](#)

62. You spill a chemical on your hands. It does not appear to be life threatening. Which of the following statements best describes the recommended course of action??

- A. Call 911.
- B. Call the building supervisor.
- C. Consult the MSDS for the chemical.
- D. Ignore it.

Quick Answer: [236](#)

Detailed Answer: [247](#)

63. Which command allows a user to change a file's permissions in Linux ?

- A. chown
- B. passwd
- C. ls
- D. chmod

Quick Answer: [236](#)

Detailed Answer: [247](#)

64. While you are working on a computer at a customer's home, the customer informs you that he needs to leave for about 10 minutes and that his 8-year-old son can help you with anything if you need it. Which of the following statements best describes the recommended course of action??

- A. Tell the customer to get back home as soon as possible.
- B. Tell the customer that you are not responsible for the child.
- C. Tell the customer that an adult must be home while you work.
- D. Tell the customer that the child must be removed.

Quick Answer: [236](#)

Detailed Answer: [247](#)

65. You want a cloud provider that will offer you service which is quickly scalable. Which of the following should be requested when you contacting potential cloud providers?

- A. Measured services
- B. Rapid elasticity
- C. On-demand service

D. Resource pooling

Quick Answer: [236](#)

Detailed Answer: [247](#)

66. A customer experiences a server crash. When you arrive, the manager is upset about this problem. Which of the following statements best describes the recommended course of action?

- A. Stay calm and do the job as efficiently as possible.
- B. Take the customer out for a cup of coffee.
- C. Avoid the customer and get the job done quickly.
- D. Refer the customer to your supervisor.

Quick Answer: [236](#)

Detailed Answer: [247](#)

67. Which type of web server is designed to resolve host names to IP addresses?

- A. DHCP server
- B. Web server
- C. Proxy server
- D. DNS server

Quick Answer: [236](#)

Detailed Answer: [247](#)

68. As you are servicing a manager's PC at your company, you run across a list of names of employees who are supposedly about to be let go from the company. Some of these people are co-workers. Which of the following statements best describes the recommended course of action?

- A. Turn the sheet over.
- B. Act as if you never saw the list.
- C. In secret, tell everyone who was on the list.
- D. Yell at the manager for having that list out.

Quick Answer: [236](#)

Detailed Answer: [247](#)

69. Which OS X utility is most like Windows' "end task" feature?

- A. Time Machine

- B.** Finder
- C.** Taskkill
- D.** Force quit

Quick Answer: [236](#)

Detailed Answer: [247](#)

70. Which of the following statements best describes how to reduce the chance of ESD? (Select the three best answers.)

- A.** Use an antistatic strap.
- B.** Use an antistatic mat.
- C.** Raise the temperature.
- D.** Raise the humidity.
- E.** Lower the humidity.
- F.** Work in a carpeted area.

Quick Answer: [236](#)

Detailed Answer: [248](#)

71. While you explain a technical concept to a customer, which of the following statements best describes the recommended course of action?

- A.** Recommend a training class.
- B.** Sit next to the customer.
- C.** Use acronyms so that the customer feels comfortable about your knowledge.
- D.** Tell the customer to read the manual.

Quick Answer: [236](#)

Detailed Answer: [248](#)

72. You are viewing the contents of an ipconfig /all on a Windows computer. You see the name abcminerals.com toward the beginning of the results. Which type of network is this Windows computer most likely a part of?

- A.** Workgroup
- B.** Homegroup
- C.** Domain
- D.** VPN

Quick Answer: [236](#)

Detailed Answer: [248](#)

73. Which of the following should be used to clean a monitor's screen when you are not sure how to do so?

- A. Isopropyl alcohol
- B. Mild detergent
- C. Water
- D. Boric acid

Quick Answer: [236](#)

Detailed Answer: [248](#)

74. You are required to register an ActiveX control in the Command Prompt. Which utility should be used?

- A. Regsvr32
- B. Regedit.exe
- C. MMC
- D. MSTSC

Quick Answer: [236](#)

Detailed Answer: [248](#)

75. You have an Intel Core i7 system with a UEFI-enabled motherboard. Which of the following types of hard drive partitioning schemes should be selected?

- A. MBR
- B. FAT32
- C. Dynamic drive
- D. GPT

Quick Answer: [236](#)

Detailed Answer: [248](#)

76. Which of the following statements best describes the recommended course of action to take prior to attempting to remediate infected Windows systems of malware?

- A. Educate the end user.
- B. Disable System Restore.
- C. Schedule scans.

- D. Update the anti-malware program.

Quick Answer: [236](#)

Detailed Answer: [249](#)

77. A customer's mobile device cannot connect to Wi-Fi. According to the customer it was working fine yesterday. Troubleshoot! Which of the following statements best describes the recommended course of action? (Select the three best answers.)

- A. Power cycle the device.
- B. Re-pair the device.
- C. Hard reset.
- D. Forget the Wi-Fi network.
- E. Check if the correct SSID was entered.
- F. Change the IP address.

Quick Answer: [236](#)

Detailed Answer: [249](#)

78. Which of the following utilities enables a Windows 7 user to edit a file offline, and then automatically update the changes when the user returns back to the office?

- A. Sync Center
- B. Windows Aero
- C. Windows Defender
- D. HomeGroup

Quick Answer: [236](#)

Detailed Answer: [249](#)

79. A help desk phone support technician is finding it difficult to understand the customer due to a heavy accent. Which of the following statements best describes the first course of action the technician should take to help the customer resolve the problem?

- A. Repeat the problem back to the customer.
- B. Have the customer call back at a later time.
- C. Ask the customer to not speak with an accent.
- D. Tell the customer that her accent is preventing the problem from being solved.

Quick Answer: [236](#)
Detailed Answer: [249](#)

80. You are troubleshooting a networking problem with Windows and you can't seem to fix it using the typical Windows GUI-based troubleshooting tools or with the Command Prompt. You have identified the problem, and established a theory of probable cause (in fact you are on your fourth theory). Which tool should be used to troubleshoot the problem and in what stage of the troubleshooting process should you do so?

- A. Regsvr32—Conduct external or internal research based on symptoms.
- B. Gupdate—Perform backups before making any changes.
- C. USMT—Verify full system functionality.
- D. Regedit—Test the theory to determine cause.
- E. Boot Camp—Document findings, actions and outcomes.

And that wraps up Exam C. Take a nice long break before moving on to the fourth and final 220-902 exam.

Quick Answer: [236](#)
Detailed Answer: [250](#)

Quick-Check Answer Key

- [1.](#) A
- [2.](#) C
- [3.](#) A
- [4.](#) D
- [5.](#) A
- [6.](#) C
- [7.](#) B
- [8.](#) C
- [9.](#) B
- [10.](#) B, D
- [11.](#) C
- [12.](#) C, D
- [13.](#) B

- 14. B
- 15. C
- 16. B
- 17. C
- 18. B
- 19. A
- 20. D
- 21. B
- 22. D
- 23. A
- 24. B
- 25. D
- 26. D
- 27. D
- 28. B
- 29. C
- 30. D
- 31. B
- 32. C
- 33. A
- 34. A, C
- 35. A
- 36. D
- 37. C
- 38. B
- 39. D
- 40. C
- 41. C
- 42. C
- 43. A
- 44. C
- 45. B
- 46. A

- 47. A
- 48. B
- 49. A
- 50. D
- 51. B, D, F
- 52. D
- 53. B
- 54. D
- 55. B, D
- 56. A
- 57. C
- 58. A
- 59. B
- 60. A
- 61. B, D, G
- 62. C
- 63. D
- 64. C
- 65. B
- 66. A
- 67. D
- 68. B
- 69. D
- 70. A, B, D
- 71. B
- 72. C
- 73. C
- 74. A
- 75. D
- 76. B
- 77. A, D, E
- 78. A
- 79. A

80. D

Answers and Explanations

- 1. Answer: A.** The classification of data helps prevent confidential information from being publicly disclosed. Some organizations have a classification scheme for their data, such as normal, secret, and top secret. Policies are implemented to make top secret data the most secure on the network. By classifying data, you are determining who has access to it. This is generally done on a need-to-know basis. Social engineering is the art of manipulating people into giving classified information. A remote access server (RAS) allows users to connect remotely to the network. To protect the connection (and data that passes through it), an organization might opt to use a VPN or RADIUS server, or both. Wiping a hard drive is vague. How is it being wiped? If it is being formatted, then that is not enough to protect confidential information. You need to perform bit-level erasure with third-party software, degauss the drive, or destroy it to make sure that no one can access the data. The thing is that data is always stored somewhere on a server or NAS device, so properly disposing of a single hard drive doesn't protect any and all confidential information from being publicly disclosed.
- 2. Answer: C.** HKEY_LOCAL_MACHINE is the registry hive that stores information about the programs Windows runs when it starts. The actual hives are stored in \%windir%\System32\Config. But it's okay to call HKEY_LOCAL_MACHINE and the other HKEYs hives. Most technicians do it, and you might see them referred to that way on the exam as well. The HKEY_LOCAL_MACHINE hive is the one you will access the most often. You can configure advanced settings for TCP/IP, the GUI of the OS, and lots more from here. HKEY_CURRENT_CONFIG contains data that generated when the system boots; nothing is permanently stored. HKEY_USERS stores the information for each user profile. HKEY_CLASSES_ROOT contains information about registered applications and file associations.
- 3. Answer: A.** Internet Explorer (or any other web browser) is normally used to configure a router. It's sometimes referred to as *romming* into the router because the configuration program is stored in the ROM chip of the router. You can type the IP address of the router into the Windows Explorer/File Explorer address bar, but that

will simply open an IE (or other browser) tab. The Device Manager is where you enable and disable devices and install, update, and roll back drivers for devices. Msconfig is used to modify how the computer boots and to enable/disable programs and services.

- 4. Answer: D.** The first thing you need to supply is the driver for any special SATA drives, SCSI drives, or RAID controllers. That of course is optional. If you have a typical SATA drive, Windows should recognize it automatically. Once Windows knows which hard drive to install to, partitioning, then formatting, and then configuration of settings can commence, in that order.
- 5. Answer: A.** Although Windows has the Reconnect at Logon check box selected by default, it could have been disabled. If you do choose to use the net use command, be sure to make persistent connections. This is done by adding /persistent:yes to the command syntax.
- 6. Answer: C.** MAC filtering is used to restrict computers from connecting to a network; it is based on the physical Media Access Control (MAC) address of the computer's network adapter. It works with wired or wireless connections. WPA is used to encrypt the wireless session between a computer and the wireless access point (WAP); its key code is required to gain access to the network. DHCP settings simply allow a specific range of IP addresses, and other IP data such as gateway address and DNS server address, to be handed out to clients. The SSID broadcast is the name of the wireless network as broadcast out over radio waves by the WAP.
- 7. Answer: B.** The Print Spooler needs to be restarted on the computer that started the print job or the computer that controls the printer. This can be done in the Services console window or in the Command Prompt with the net stop spooler and net start spooler commands, or anywhere else where services can be started and stopped such as the Task Manager. Okay, that was an easy one, but the real exam will have a couple easy ones thrown in as well. Don't think too hard when you actually do receive an easier question.
- 8. Answer: C.** Adding the port number and name of service to the Windows Firewall Exceptions list is the correct answer. But I'm going to pontificate more, as I usually do. Uninstalling and reinstalling the SP or security update does not help this particular situation. Remember that Windows 8 and newer do not use service packs anymore, and simply use "updates." By default, any of today's

Windows OS versions enable the Windows Firewall automatically and won't allow inbound connections from the server to the network application. Therefore, you need to make an "exception." In Windows, use the Windows Firewall with Advanced Security, either from Administrative Tools, or by typing wf.msc in the Run prompt. If you decide to add a port, you need to know the port number of the application. For example, VNC applications might use port 5900 or port 5901 for incoming connections.

- 9. Answer: B.** The PC air intakes are probably clogged with cement dust. This stops fresh, cool air from entering the PC and causes the CPU to overheat. That's why the system won't reboot immediately because the CPU needs some time to cool down. You should install a filter in front of the PC air intake and instruct the customer to clean the filter often. While you are working on the computer, you should clean out the inside of the system and vacuum out the exhaust of the power supply (without opening the power supply of course). If the PC had a virus, that might cause it to lock up or shut down, but you would be able to reboot the computer right away. Plus, there would probably be other indicators of a virus. The CPU heat sink could be an issue and could cause the same results, but it is less likely. Companies often buy computers from popular manufacturers such as Dell and HP; these computer manufacturers spend a lot of time designing their heat sink/fan combinations to work with the CPU. If the power supply was underrated, it would cause intermittent shutdowns, but not lockups. Nothing in the scenario would lead you to believe that the computer uses so many powerful components as to make the power supply underrated.

- 10. Answers: B and D.** The share-level permissions must first be set to enable access to the user. Then the NTFS file-level "user" permissions must also be set; these take precedence over share-level, unless the share-level access is set to deny. Certificates are normally used in Internet or VPN sessions. Local user access is somewhat vague but doesn't apply here because when a user connects to a shared resource, that person does so over the network to a remote computer.

- 11. Answer: C.** WPA2 is more secure than all the rest. WAP is actually short for wireless access point; don't mix them up! WEP is deprecated and should be avoided unless it is the only option available. The best wireless encryption method on most SOHO

wireless access points is WPA2 with AES.

- 12. Answers: C and D.** Pictures and e-mail are possibly valuable, and definitely irreplaceable, if there is no backup. The rest of the answers mention things that can be restored or reinstalled from the operating system disc or image.
- 13. Answer: B.** Of all the answers, the only one that deals with the local level is Local Security Settings. All the others require at least one domain controller on the network. The A+ exam does not test you on your knowledge of domain controllers and their security policies, but you should know some of the terms in order to compare them to security options on the local computer. The Local Security Policy can be accessed from Administrative Tools, or by typing secpol.msc in the Run prompt.
- 14. Answer: B.** Because each user on the LAN has his own internal private IP address, users are safe from external public IPs. Network Address Translation (NAT) translates all those internal IPs into one external public Internet IP for communication with outside sources. It enables the outside sources to “see” the public IP but not the internal private IPs.
- 15. Answer: C.** Though USB is famous for recognizing devices and installing drivers automatically, it doesn’t work perfectly all the time. In the instance of barcode readers, you will often have to download the latest driver from the manufacturer’s website. That is the best answer, though an OS update might find a compatible driver. With peripherals such as these, it is all the more important to get the driver from the creator of the device. If the computer was able to recognize the device, you can rule out faulty USB cables or too many USB devices being plugged in. Let’s face it—at 127 devices maximum, it’s tough to have *too* many USB devices!
- 16. Answer: B.** In many cases, passwords cannot be reset by the user or by the systems admin. If that is the case, you need to verify the identity of the person first. You might need to do so just as a matter of organizational policy. Telling the person not to do that or that the person should simply remember the password is just rude. If the password could be reset and you are allowed to do so, it should be reset immediately.
- 17. Answer: C.** GPS can help to locate a stolen or lost mobile device. There are plenty of third-party programs that allow the user to track the device, as long as it is on and has GPS installed and functioning.

If the device is off, the program will display the last known good location. Passcodes are used to secure the device in the event that it is stolen or lost. Auto-erase is used to wipe the contents of the device if lost or stolen. Encryption protects the data in the case that the user no longer has possession of it.

- 18. Answer: B.** To aid in preventing access to a wireless network, disable the SSID. But only do this when all computers have been connected. If more computers need to be connected later, they will have to connect manually or the SSID will have to be reenabled. Although this is an okay security method, it won't keep smart attackers out of your network. MAC filtering and WPA2 encryption do a much better job at that than disabling the SSID.
- 19. Answer: A.** If you are just *setting* the time on the computer, use the time command. Time can also be set in Windows within the Notification Area. This was a bit of a trick question because we are only dealing with local time, not anything network-related. So the rest of the answers are incorrect. The net time command is needed if you want to synchronize the local computer's time to another system or just find out the time on a remote system. `net timer` is not a valid command. The `net time` command uses the /set option if you wish to synchronize time to another computer.
- 20. Answer: D.** The Character Map enables you to copy characters from any font type. To open it in Windows 7 or Vista, go to Start > All Programs > Accessories > System Tools > Character Map. Otherwise, in any version of Windows, you can locate it simply by searching for it by name. The Language Bar automatically appears when you use handwriting recognition or speech recognition. It can be configured within Region and Languages. Sticky keys is a feature that helps users with physical disabilities; it can be turned on by rapidly pressing the Shift key five times and agreeing Yes. Control Panel > Fonts opens the Fonts folder where you can add or remove text fonts.
- 21. Answer: B.** Jailbreaking is the process of removing the limitations of an Apple device's iOS. It enables a user to gain root access to the system and download previously unavailable applications, most likely unauthorized by Apple. Rooting is similar, but it is a term typically used with Android-based devices. It gives administrative capabilities to users of Android-based devices. Both of these are not recommended and may void device warranties. VirusBarrier is the

first AV software designed for iOS; it was developed in response to a particularly nasty jailbreak. Super-admin powers is just a colorful term for what you get when you root or jailbreak a mobile device.

22. Answer: D. The Sync Center is located within the Control Panel or can be found using the search tool. It allows you to set up synchronization partnerships with external devices and enables you to manage offline files. Quite often, the individual icons within the Control Panel are referred to as applets. File History is the name of the backup program in Windows 8/8.1. The command-line-based User State Migration Tool (USMT) is used to move files and user settings from multiple computers at once. Robust file copy is a Command Prompt tool (Robocopy) that is used to move large amounts of data; it is the successor to Xcopy, though Xcopy is still available in Windows.

23. Answer: A. Unicode is the code used to represent characters among multiple computers' language platforms. ASCII and EBCDIC are different types of character encoding sets in the English language only. ITU-T deals with standards for telecommunications.

24. Answer: B. New malicious software (malware) is always being created. Because of this, the best place to find information about spyware, a virus, rootkit, ransomware, or other malware is at a place that can be updated often and easily: the anti-malware company's website. Operating system documentation usually does not have this kind of information. In addition, the OS documents and the anti-spyware readme.txt file will be outdated soon after they are written. Never trust in what a user has to say about malware. The user is not the person who would remove it—a technician would.

25. Answer: D. Because it happens often, you should school the user on safer web browsing habits such as being very careful when clicking on links brought up by search engines, not clicking on pop-up windows, and being conservative about the websites that are accessed. Also, the browser can be updated, add-ons can be installed to a web browser for increased protection, phishing filters can be enabled, and so on. Deleting temporary files won't stop the user from visiting the same websites that probably caused the problem in the first place. Defragmenting the hard drive helps the drive and the OS to perform better but doesn't help in the malware department. The computer should have an antivirus solution or, better yet, an anti-malware solution, but it should be set to update automatically.

every day.

26. Answer: D. Connections can be made by sending Remote Assistance invitations by e-mail (Outlook or other e-mail client) or via instant messaging (Windows Messenger also known simply as Messenger). These invitations could be to ask for help or to offer help. This is often implemented in help desk scenarios in which a user invites a technician to take control of his computer so that it can be repaired. It's effectively a virtual service call. The technician doesn't need to come physically to the user's desk, but instead connects remotely. However, you can also take control of a computer without an invitation (and if you are an administrator or a user with permissions); this can be done only if the computer to be controlled has the Remote Desktop feature turned on. Virtual network computing (VNC) is very similar to Remote Desktop; it enables control of a computer remotely. There are several third-party VNC companies that offer free software. Microsoft doesn't refer to its software as VNC though. On the server side Microsoft also refers to Remote Desktop as Terminal Services. Collectively the client software is also referred to as Microsoft Terminal Services Client (MSTSC). Mstsc.exe is the executable which can also be used in the Command Prompt.

27. Answer: D. The default folder location for Windows 7 system files is C:\Windows\System32. That is, if the C: is the drive being installed to (which is the default). You might also see this referred to as X:\%windir%\System32 or simply \%windir%\System32. The X: is a variable meaning whichever drive is installed to. %windir% is a variable referring to the name of the main installation folder (usually Windows). %windir% is also expressed sometimes as %systemroot%. C:\Windows is the systemroot, where the OS is installed to (though it also inhabits subfolders). C:\Windows\System32\Config is where the registry hives are stored. There is no C:\System Files folder, unless you were to create it yourself.

28. Answer: B. You would use the Google Cloud Platform solution so that files can be backed up to a location outside the company. There are several other third-party solutions available as well. iCloud is the Apple solution for file backup, apps, and so on. Microsoft OneDrive has the same types of features in a variety of solutions. A company-based local network-attached storage (NAS) device would go against

what you have been asked to do in the scenario. If the NAS was on the Internet or part of a cloud, that would be a different story.

29. Answer: C. Use Notepad. It is a text-based editor that applies virtually no formatting. Text and other information can be copied from a web page, pasted to a Notepad document, and then copied again and pasted into Word; all formatting will have been removed. Notepad is also a great tool for web developers (using HTML) and system administrators (when creating batch files and other configuration files). CMD, or more specifically cmd.exe, is the executable that opens the Microsoft Command Prompt. Excel is a program by Microsoft that enables you to create and modify spreadsheets. The MMC is the Microsoft Management Console. This is a utility in Windows that enables you to work with several console windows within the same program; it saves the last place you were working.

30. Answer: D. The printing subsystem is most likely failing for one of a variety of reasons. The first solution is to terminate spoolsv.exe (which is the Print Spooler service) in the Task Manager or in the Command Prompt with the taskkill command. Then restart the computer. If that doesn't work, the system may have to be repaired, restored, or modified in the registry (which could be an in-depth process). It is also possible that a virus has compromised the system. There are viruses that are also called spoolsv.exe; a quick sweep of the system folders with AV software should uncover this ... hopefully. If the Windows Update was running, it should not take up that many resources—not nearly so. Also, the executable for that is wuauctl.exe. Hyper-Threading can be disabled in the BIOS/UEFI on some systems. This should have no effect on the ability of the system to multitask, though, and multiple processes should be able to run simultaneously without a problem.

31. Answer: B. IMAP is the Internet Message Access Protocol, which allows an e-mail client to access e-mail on a remote mail server. Generally, the e-mail client software leaves the messages on the server until the user specifically deletes them. So, the user can selectively download messages. This allows multiple users to manage the same mailbox. Real-time messaging can be accomplished by using instant messaging and chat programs. IMAP, like POP3, allows users to download or receive messages, but it does not send messages; a protocol such as SMTP would be used to send

mail. IMAP, like POP3, authenticates the user, but again not for sending e-mail—just when receiving e-mail.

32. Answer: C. Libraries are commonly known as metafolders; they are logical representations of a user's content. For example, one library in Windows 7 is called Documents. The Documents library includes two default locations: My Documents and Public Documents.

33. Answer: A. Use the Device Manager to disable a component in Windows, regardless of whether it is a laptop or a PC. Use the Task Manager to analyze basic system performance and stop processes. Use Computer/This PC to view folders, files, and other computers. Use the Services console (services.msc) to stop and start and modify the startup type of services.

34. Answers: A and C. If you can't shut down the application in the section that houses running apps and services, then try initiating a soft reset first. On an Android device this is simply pressing and holding the power button, shutting it down, and then restarting it after a few seconds. If, however, pressing the power button doesn't do anything, remove the battery so that the device will have its power supply cut. Replace the battery and reboot the phone! Don't do a hard reset unless it is absolutely necessary. On an Android-based device, this clears it and returns it to factory condition. Removing the memory card in of itself won't fix the problem, but seeing as how many devices store the memory card under the battery, this could indirectly fix the problem.

35. Answer: A. The sigverif.exe tool can be used to check for unsigned drivers within your Windows operating system. Unsigned drivers are drivers that have not been verified by Microsoft. If you receive error messages and are troubleshooting, run this command from the Run prompt. When the check is finished, unsigned drivers are displayed. This list is also stored in a file called sigverif.txt within the %windir% (%systemroot%). dxdiag is short for DirectX diagnostics. It is used to test the functionality of audio and video devices. ping is used to test whether or not another host is on the network. Msconfig (the Microsoft System Configuration Utility) is a tool used to troubleshoot the startup process of Windows.

36. Answer: D. User Account Control (UAC) is the portion of Windows that asks for confirmation of administrative rights before allowing a user to make system changes or run certain applications. It can be disabled within the User Accounts applet within the Control

Panel by clicking the Change User Account Control Settings link. But beware; only users that have administrative rights should even be permitted to turn this off.

37. Answer: C. If a “print sub-system not available” message or similar message appears, it most likely means the spooler has stalled. This can be turned back on within the Services section of Computer Management or by issuing the command `net start spooler` in the Command Prompt. If the wrong printer driver was installed, either the user would get a message stating that the printer is not available or the document would print but the information would be garbled. If the printer has not been added, the user would not be able to print any documents to any printers, and therefore should not get an error message. If the printer is not getting power, the user would most likely get a message stating that the printer is not available.

38. Answer: B. Boot Logging can be enabled from the Windows Advanced Boot Options Menu in Windows 7/Vista, also known as the ABOM (called the Startup Settings in Windows 8/8.1); it is generally the fourth option. After this is enabled, the system automatically creates a file called `ntbtlog.txt`. Afterwards, you can access the system by booting into Safe Mode, once again from the ABOM. Sigverif is a program that can be run in Windows that verifies whether drivers have been signed by Microsoft. Disabling Driver Signature Enforcement is another ABOM option; you might use this to help fix the issue, but not to diagnose the problem. Debugging Mode is another ABOM option, but in this scenario you don't necessarily need to debug the system, but rather repair the individual driver that failed to load up.

39. Answer: D. `Chkdsk /F` allows you to fix errors on a disk. It does not fix all errors, but checks for disk integrity, bad sectors, and similar issues. `Xcopy` copies files and directory trees; Microsoft recommends using `Robocopy` on newer Windows operating systems. `Tracert /w` analyzes the path to another computer with a specific timeout per reply. `Diskpart` is the command-line tool that enables you to make changes to the operating system's partition table.

40. Answer: C. The application log is the location for all events concerning Windows applications and third-party programs. The system log contains information about drivers, system files, and stop errors, but not application crashes. The security log contains

information regarding auditing events. The setup log stores information of events that occurred during the installation of Windows.

- 41. Answer: C.** Windows 7 Ultimate can run in Windows XP mode, join domains, and utilize BitLocker encryption. Starter and Home Premium can do none of these. Windows 7 Professional cannot utilize BitLocker encryption. On a side note, Windows 7 Enterprise can also run BitLocker, although it was not one of the listed answers.
- 42. Answer: C.** Windows Vista Ultimate 32-bit can only be upgraded to Windows 7 Ultimate 32-bit. It cannot be upgraded to any other version of Windows 7. As a rule, 32-bit versions of Windows cannot be directly upgraded to 64-bit versions of Windows.
- 43. Answer: A.** Use Xcopy. This is designed to copy entire folders (and all of their subfolders) to a new location. Another option is Robocopy, the successor to Xcopy. Expand is used to inflate compressed files such as cabinet files or compressed files with an underscore on the end of the filename (such as ntoskrn.ex_). Copy is the original command for copying data from one location to another, but it is not as well-suited to copying large amounts of data as Xcopy or Robocopy are. The move command does just that; it is the equivalent of the *cut* in cut-and-paste operations.
- 44. Answer: C.** Msconfig is the only option listed where you can disable services. The key in the question is the phrase “bring up a window.” Msconfig runs in a Window, whereas the rest of the answers run as text in the command-line. Msconfig can also be used to modify how the system boots and to enable/disable applications (though in Windows 8 the Startup tab leads to the Task Manager). SFC is the System File Checker; it scans the integrity of protected system files and repairs problems if necessary, and if possible. Contrast this with Chkdsk, which can locate and repair errors on the disk, but not within system files. Gpupdate can update user and computer policy settings on the local computer or on remote computers.
- 45. Answer: B.** Autochk.exe is an executable (and system process) that checks the integrity of an NTFS volume in Windows. It enables a Windows operating system to revert core system settings to their original state. Autochk is similar to chkdsk but autochk runs during system bootup (after a cold boot), whereas chkdsk runs in the

command-line. Autochk cannot run within the command-line. Autochk will be initiated if: 1. Chkdsk cannot gain exclusive access to the volume, 2. If you try to run chkdsk on the boot volume, and 3. If the volume to be checked is “dirty.” For example, if a system hangs, and has open files, those files are considered to be dirty, and therefore the volume that houses them is also dirty, and is checked by autochk after a hard reset otherwise known as a cold boot. SFC is the system file checker utility. The convert command is used to change a FAT partition to NTFS without loss of data. Regedit.exe is the executable in Windows that opens the Registry Editor.

46. Answer: A. The \Boot folder can be located in a hidden partition (100 MB in size), by default, which is separate from the C drive. The Windows folder is where the operating system is installed to; it is also known by the variable %systemroot% or %WINDIR% and is located in the C: drive by default. \Documents and Settings is also located in C: by default. Bootmgr is the Windows Boot Manager, which is the Windows loader program; it is a file, not a folder.

47. Answer: A. The best solution is to upgrade the wireless network from WEP to WPA2, or at least WPA. WEP is a deprecated wireless encryption protocol and should be updated to a newer and more powerful protocol if at all possible. If this is not possible, it would be wise to use a strong WEP key and modify it often. MAC address filtering does not increase the level of data encryption, but it does filter out unwanted computers when they attempt to connect to the wireless access point. Disabling the SSID broadcast deters new computers from making initial connections to the wireless access point.

48. Answer: B. `dir /a` can be used to display hidden files. Specifically, `dir /ah` can be used to show hidden files only. `dir /o` deals with various sort orders of files—for example, alphabetical. `dir /d` sorts files by column in wide format. `dir /?` displays the help file for the `dir` command.

49. Answer: A. Try accessing Safe Mode first and see if the problem continues. It probably won’t, and you will need to roll back the driver and locate, download, and install the correct one. Remember to get your drivers from the manufacturer’s website, and don’t forget to download the correct driver for your particular operating system. Chkdsk checks the integrity of files and fixes them if necessary. Msconfig is used to boot the computer in different ways. Although

you normally could select Safe Boot in Msconfig, it is not possible in this scenario because the system won't boot into Windows properly. You could check the System log while in Safe Mode, but it won't explain much except that the system shut down improperly and rebooted continuously.

50. Answer: D. If a computer starts receiving pop-up advertisements after an application has been installed, the application probably included adware. Although pop-up ads are not necessarily harmful to a computer, the other answers (including Trojan horse, worms, and logic bombs) are usually more serious and affect the computer adversely.

51. Answers: B, D, and F. First off, you should configure some kind of remote backup. This way, if the device is compromised, you have the confidential data backed up outside of the device at another location. The other half of this solution (not mentioned in the answers) is remote wipe. Once you are positive that the device is stolen or lost, and you know the data was backed up at some point, trigger a remote wipe to remove all data from the device. Second, Enable GPS on the device so that it can be tracked if it is lost or stolen. Third, configure a screenlock of some sort, be it a pattern that is drawn on the display, a PIN, or a password. A strong password is usually the best form of screenlock and the hardest to crack. It doesn't make a difference how Bluetooth and Wi-Fi are configured. They won't help to protect confidential data.

52. Answer: D. Most likely User B moved the file to another location outside of the current partition, made the changes (which is possible since User B is the one who moved it), and then moved it back to the original location. Whenever a file is moved to another partition or volume, the file takes on the permissions of the parent folder. However, if the file had been moved *within* the volume, the permissions would have been retained. Tricky. Remember this: If the file is moved within the same volume, it retains permissions, so the permissions don't change. But, if a file is moved to another volume, it takes on the permissions of the folder it is moved into. As for copying, the file's copy always takes on the permissions of the parent regardless of where that copy is placed. On to the incorrect answers: If NTFS permissions were changed to allow execute, then User A should have been able to open the file. If the file was set with the hidden attribute, then User A should not have been able to see the

file. Accounts Receivable might or might not set a file to read-only. However, User A should still be able to open the file, but in read-only mode.

53. Answer: B. Chkntfs can check to see if a previous system shutdown completed successfully. Generally, you would check this on the system drive (for example, C:). If the drive is okay and the system did complete the shut down successfully, you'll get a message such as "C: is not dirty." Otherwise, you get a message telling of the error. Chkdsk checks the integrity of the disk. Ipconfig displays the configuration of your network adapters. SFC scans the integrity of all protected system files and can replace them with the correct versions if necessary.

54. Answer: D. Authentication is when a person's identity is confirmed or verified through the use of a specific system. Authorization to specific resources cannot be accomplished without previous authentication. Identification is when a person is in a state of being identified. Identity proofing is an initial validation of an identity.

55. Answers: B and D. By using WPA2 (the strongest type of encryption on most wireless access points), you ensure a high level of encryption, helping to reduce unauthorized access. Using MAC filtering filters out unwanted computers by checking their MAC addresses when the computers first try to connect. Additional wireless access points and signal boosters would increase the chances of unauthorized access. Broadcasting the SSID also increases the chance of unauthorized access because any wireless device will see the name of your network. When all wireless devices have made their initial connections to the wireless access point, consider disabling the SSID broadcast.

56. Answer: A. The Windows PowerShell enables administrators to perform administrative tasks that integrate scripts and executables and can be run over a network. It is a combination of the Command Prompt and a scripting language. The PowerShell is the successor to the Windows Script Host (WSH). The Command Prompt is Windows' version of a command-line. It is not as functional as the PowerShell.

57. Answer: C. The User State Migration Tool (USMT) is a command-line tool that can be used to migrate user files and settings for one or more computers in Windows. Xcopy is used to copy entire directories or volumes of data, but is not designed specifically for

migrating user files and *settings* (and particularly not for multiple computers). Windows Easy Transfer enables you to copy files, photos, music, and settings, but not for multiple computers.

58. Answer: A. The Task Manager can end (or “kill”) a running process. It is also used to end applications that lock up and it analyzes the performance of the system. Computer Management is the main configuration console window; it contains the Device Manager, Event Viewer, and Services among other things. The Control Panel lists all of the configuration applets available in Windows such as Power Options, User Accounts, and Windows Defender. `tasklist` is a command in Windows that displays a list of the processes that are running. To kill a process in the Command Prompt, first find out the name of the process and/or process ID (PID) with `tasklist`, and then use the `taskkill` command to end the process.

59. Answer: B. exFAT (also known as FAT64) is suited specifically for USB flash drives and many other mobile storage solutions. It is the successor to FAT32 and can format media that is larger than 32 GB with a single partition. Older file systems such as FAT32 and FAT16 are very limited as to the partition size. NTFS can be a good solution for USB flash drives, but exFAT was developed specifically for USB flash drives and is the better solution if you have an operating system that supports it, such as Windows 8, Windows 7, Windows Server 2012, Windows Server 2008, and Windows Vista with SP1.

60. Answer: A. Spyware is a type of malicious software that is usually downloaded unwittingly by a user or is installed by third-party software. It collects information about the user and the user’s computer without the user’s consent. A virus is code that runs on the computer without the user’s knowledge; it infects a computer when the code is accessed and executed. A rootkit is software designed to gain administrator-level control over a computer system without being detected. Spam is the abuse of electronic messaging systems such as e-mail.

61. Answers: B, D, and G. You can stop a service in a variety of ways. The easiest and most common is to go to the Services console window. This can be done by typing `services.msc` at the Run prompt. You can also stop services in the Task Manager by accessing the Services tab and right-clicking the service in question. But in the Task Manager you have to know the executable name of

the service. The name of the Windows Firewall service is mpssvc. So, the third way (of the listed answers) is to use the `net stop mpssvc` command in the Command Prompt. Performance Monitor, System Information, and Gredit do not allow you to stop services.

62. Answer: C. If it is not life-threatening, consult the material safety data sheet (MSDS) to determine the proper first aid (if any). If it is an emergency, call 911. If you cannot get access to the MSDS, contact the facilities department of your organization or try your building supervisor. Never ignore a chemical spill. Take action before it becomes a problem.

63. Answer: D. The `chmod` command allows a user to modify file and folder permissions in the Linux command-line. The `chown` command allows a user to change the ownership settings of a file. `Passwd` enables a user to change the password in the command-line. `Ls` displays the contents of a directory in Linux. These commands can also be used in OS X.

64. Answer: C. Whenever you're working in someone's home, make sure that there is an adult available. It is not your responsibility to watch over children, nor should any company agree to have its consultants do this. If the person insists on leaving, and you can pack up your things before he goes, do so, and then call your supervisor to inform her of the event.

65. Answer: B. Rapid elasticity means that the service can be scalable at need and can grow in real-time with your company's growth. Measured services is when the provider monitors the services rendered so that the provider can properly bill the customer. On-demand service simply means that users can get cloud connectivity at any time, 24/7. Resource pooling is the grouping of servers and infrastructure for use by multiple customers but in a way that is on-demand and scalable. All of these terms are interconnected and a customer should be concerned with all of them.

66. Answer: A. Stay calm and do the job as efficiently as possible. There isn't much you can do when a customer is upset except fix the problem! I'd be interested to see what would happen if a person asked the owner of the server out for a cup of coffee, but I'm pretty sure the reaction would be negative. You don't want to avoid the customer, but you don't have to engage in anything except fixing the problem. The customer should be referred to your supervisor only if the person gets in the way of you doing your work.

67. Answer: D. A (Domain Name System) DNS server is designed to translate host names (such as www.davidlprowse.com) to their corresponding IP addresses (for example 65.18.242.1). A DHCP server is used to automatically assign IP addresses and client-side DNS settings to client computers. A web server houses websites for people to access on the Internet (or intranet or extranet). A proxy server is a go-between server that has several functions, the primary of which is to cache WWW or FTP information for clients on the network.

68. Answer: B. There isn't much you can do in a situation like this. The best thing is to ignore it and act as if it never happened. Technicians must be security-minded. In addition, the purported list might be real, but it might not be. It isn't your call to make. However, before working at a *customer* site, you should ask that all confidential materials be removed before you begin work.

69. Answer: D. The force quit option in Apple's OS X is most like the "end task" feature in Windows' Task Manager. It helps when an application is not functioning as intended and is either frozen or intermittently slows down the system. Time Machine is OS X's backup utility, similar to Windows' File History. Finder is OS X's file and application exploration tool, similar to Windows' File Explorer or Windows Explorer. Taskkill is actually a Windows command, but it does the same thing as the end task feature in the Task Manager—only it does it in the Command Prompt.

70. Answers: A, B, and D. To reduce the chance of electrostatic discharge (ESD), use an antistatic wrist strap and mat. Also, consider raising the humidity. The more humidity there is, the less friction, and ultimately, less ESD. Raising the temperature has no effect. Lowering the humidity increases the chances of ESD. Working in a carpeted area also increases the chance of ESD; try to work in a non-carpeted area. You should also touch the chassis of the computer before handling any components. In addition, place components in antistatic bags when they are not in use.

71. Answer: B. Make the customer truly feel comfortable by sitting down next to her and taking the time to explain the technical concept from a simple and concise point of view. The less jargon, the better. Recommending a training class is tantamount to dismissing the customer off-hand. Telling the customer to read the manual is just downright rude. I know, I say this often to you the reader—however,

you are a tech, so reading the manual is what you do. The customer is not supposed to be super-technically oriented. The acronym RTM should be kept within technical circles!

72. Answer: C. If you see the name abcminerals.com toward the beginning of the results of an ipconfig /all command, then the computer is most likely a part of the abcminerals.com domain. This would be listed in the Primary DNS Suffix entry, which is usually directly after the Host Name entry. The .com is the giveaway. Some kind of DNS extension (such as .com or .net) is necessary when you have a domain. If the computer were simply part of a workgroup or homegroup, the Primary DNS Suffix entry would be left blank. If the computer was connected to a VPN then you would see IP configuration details for a “Tunnel adapter” connection farther down the list of results of the ipconfig /all.

73. Answer: C. If you are not sure about what to clean a screen with, use water. Water will most likely not damage the screen. However, if the user manual for the monitor calls for it, you might see that you can use a half-and-half mixture of water and isopropyl alcohol. Do not use detergents on a screen; they are okay for the outside of a computer case but not the display. And boric acid would just be plain silly (and quite dangerous).

74. Answer: A. The regsvr32 command is used to register and unregister ActiveX controls and Dynamic Link Libraries (DLLs). For example, to register the Sample ActiveX control you would type regsvr32 sample.ocx. Regedit.exe opens the registry editor, allowing you to perform just about any configuration you can imagine in Windows, from the simple to the mega-complex. The MMC is the Microsoft Management Console, it is a blank console window that you can use to work with multiple other console windows simultaneously (for example Computer Management and the Local Security Policy). MSTSC is the Command Prompt version of Remote Desktop Connection in Windows.

75. Answer: D. If your system’s motherboard is equipped with a UEFI BIOS then you should definitely take advantage of the GUID Partitioning Table (GPT). It is superior to Master Boot Record (MBR) technology. It allows for up to 128 partitions, is not limited to the 2 TB maximum partition size of MBR and stores multiple copies of itself on the system. FAT32 is not really a partitioning scheme, but rather a type of file system, and an older one at that.

NTFS or exFAT is preferable. A dynamic drive is a drive in Windows that has been upgraded from basic—it allows a user to change the size of the volumes on the drive.

76. Answer: B. You should disable System Restore on Windows systems just before attempting to remediate the system of malware. This is step 3 of the CompTIA A+ best practices/procedure for malware removal. The entire procedure is:

1. Identify malware symptoms.
2. Quarantine infected system.
3. Disable System Restore (in Windows).
4. Remediate infected systems.
 - a. Update antimalware software.
 - b. Scan and removal techniques (safe mode, pre-installation environment).
5. Schedule scans and run updates.
6. Enable System Restore and create restore point (in Windows).
7. Educate end user.

As you can see, the rest of the answers listed in the question come after (or during) “remediate infected systems.”

77. Answers: A, D, and E. If a mobile device cannot connect to the network you should attempt to power cycle the device, forget and reconnect to the Wi-Fi network, and check if the correct SSID was entered in the first place. Perhaps the #1 method would be to power cycle Wi-Fi (not listed in the answers). Re-pairing has to do with Bluetooth, not Wi-Fi. A hard reset wipes the device of its data and return it to factory condition. This is a very last resort—there are plenty of other things that can be tried before that. Changing the IP address is possible, but usually not necessary as most mobile devices obtain their IP addresses dynamically.

78. Answer: A. The Sync Center is a feature of Windows that enables you to keep information synchronized between your computer and network servers. You can still access the files and modify them even if you don’t have physical access to the server; in this case they are modified “offline” and are synchronized automatically when you return to the network. Some mobile devices are also compatible with Sync Center. The Sync Center can be configured within the Control Panel. Windows Aero is the premium visual experience included in

some versions of Windows Vista and Windows 7. Windows Defender is the free Microsoft anti-malware program. HomeGroup is meant to quickly and easily share printers and media between Windows computers in a home network.

79. Answer: A. The technician should repeat the problem back to the customer to make sure that everyone is talking about the same thing and that both parties understand each other. Always clarify! Having the customer call back later is just delaying the problem. Asking a person with an accent to stop speaking with an accent is like telling a dog to stop wagging its tail; it is probably futile. A technician needs to be culturally sensitive. If you seriously cannot understand the customer even after attempting to listen several times and repeating the problem back, you will have to get someone else involved who can help you or attempt to communicate with the person through e-mail.

80. Answer: D. Use the Registry Editor (regedit.exe) to try troubleshooting the problem if typical GUI-based and Command Prompt methods have provided no resolution. The Registry Editor allows you to do any configuration necessary in Windows, and may be necessary for more complex troubleshooting problems. At this point you are testing the theory to determine cause because you have already identified the problem and established a theory of probable cause. Remember your CompTIA A+ troubleshooting theory listed below!

1. Identify the problem.

- Question the user and identify user changes to computer and perform backups before making changes.

2. Establish a theory of probable cause (question the obvious).

- If necessary, conduct external or internal research based on symptoms.

3. Test the theory to determine cause.

- Once theory is confirmed determine next steps to resolve problem.
- If theory is not confirmed re-establish new theory or escalate.

4. Establish a plan of action to resolve the problem and implement the solution.

5. Verify full system functionality and if applicable implement

preventive measures.

6. Document findings, actions, and outcomes.

Chapter Eleven. 220-902 Practice Exam D

Ready for eighty more? This final practice exam will be similar to Exam C in difficulty. But just for the heck of it, I might throw in a few extra doozies. Be ready for questions with longer, more in-depth scenarios and more complex answers. In this exam I assume that you have a fair understanding of acronyms and basic concepts and do not explain those within the explanations.

If you didn't already, I once again suggest taking a break between exams. If you just completed the third exam, give yourself a full hour at least before you begin this one. If you didn't score 90 percent or higher on exam C, go back and study; then retake exam C until you pass with 90 percent or higher.

Write down your answers and check them against the Quick-Check Answer Key, which immediately follows the exam. After the answer key you will find the explanations for all of the answers. Good luck!

Practice Questions

1. Which type of hypervisor runs operating systems on bare metal?

- A. Type 1
- B. Type 2
- C. Virtual PC
- D. Windows XP Mode

Quick Answer: [275](#)

Detailed Answer: [276](#)

2. Which of the following relies on PPTP to create a secure tunnel?

- A. WWAN
- B. 4G LTE
- C. VPN
- D. WLAN

Quick Answer: [275](#)

Detailed Answer: [276](#)

3. Which of the following will occur if %temp% is executed from Run?

- A. Applications located in the %temp% folder will be executed.
- B. The operating system's temporary folder will be open.
- C. The current user temporary folder will be open.
- D. Applications will be deleted in the %temp% folder.

Quick Answer: [275](#)

Detailed Answer: [276](#)

4. Which type of device uses an MOV to protect equipment?

- A. Power strip
- B. Power supply
- C. Surge suppressor
- D. Multimeter

Quick Answer: [275](#)

Detailed Answer: [276](#)

5. Ray used file properties to hide files in his folder and now needs to get the files back. Using a command-line tool, which of the following combinations of parameters will make the files viewable once again?

- A. Attrib - RV *.*
- B. Attrib - A+H *.*
- C. Attrib + A+ *.*
- D. Attrib -H *.*

Quick Answer: [275](#)

Detailed Answer: [276](#)

6. Which group is best to assign to a home user to prevent software installation?

- A. Administrators
- B. Power users
- C. Remote Desktop users
- D. Users

Quick Answer: [275](#)

Detailed Answer: [276](#)

7. A Windows PC is not booting correctly. You need to locate bad sectors and recover information. Which command is best?

- A. Chkdsk C: /R
- B. Chkdsk C: /F
- C. Chkdsk C: /C
- D. Chkdsk C: /I

Quick Answer: [275](#)

Detailed Answer: [277](#)

8. Where can a user's Desktop folder be found in Windows by default?

- A. C:\Users\%username%\desktop
- B. C:\Documents and Settings\%username%\desktop
- C. C:\System Volume Information\%username%\desktop
- D. C:\Users\System32\%username%\desktop

Quick Answer: [275](#)

Detailed Answer: [277](#)

9. A user who is part of a workgroup reports that she cannot print to a new printer. Everyone else in the workgroup can print to the new printer, and the user can still automatically send print jobs to the old printer. Which of the following statements describes how to remedy the problem? (Select the two best answers.)

- A. Add the new printer to the user's computer.
- B. Clear the print queue on the new printer.
- C. Change the user's password and permissions.
- D. Set the new printer as the default printer.

Quick Answer: [275](#)

Detailed Answer: [277](#)

10. Your organization has an Active Directory domain. One of the users, Bill, should not have read access to a folder named Accounting. The Accounting folder is shared on a network server, on a partition formatted as NTFS. Which of the following statements best describes how to stop Bill from having read access to the folder without impacting any other users on the network?

- A. Remove Bill from all domain groups that have access to the Accounting folder.
- B. Deny read access to the Accounting folder for Bill through local access security.

- C. Deny read access to the Accounting folder for any group that Bill is a member of.
- D. Deny read access to the Accounting folder for Bill through shared access security.

Quick Answer: [275](#)

Detailed Answer: [277](#)

11. One of the computers in your warehouse often requires the replacement of power supplies, CPUs, and optical drives. Which tool can help to prevent these types of hardware faults?

- A. Compressed air
- B. Antistatic wrist straps
- C. Rescue disk
- D. Multimeter

Quick Answer: [275](#)

Detailed Answer: [277](#)

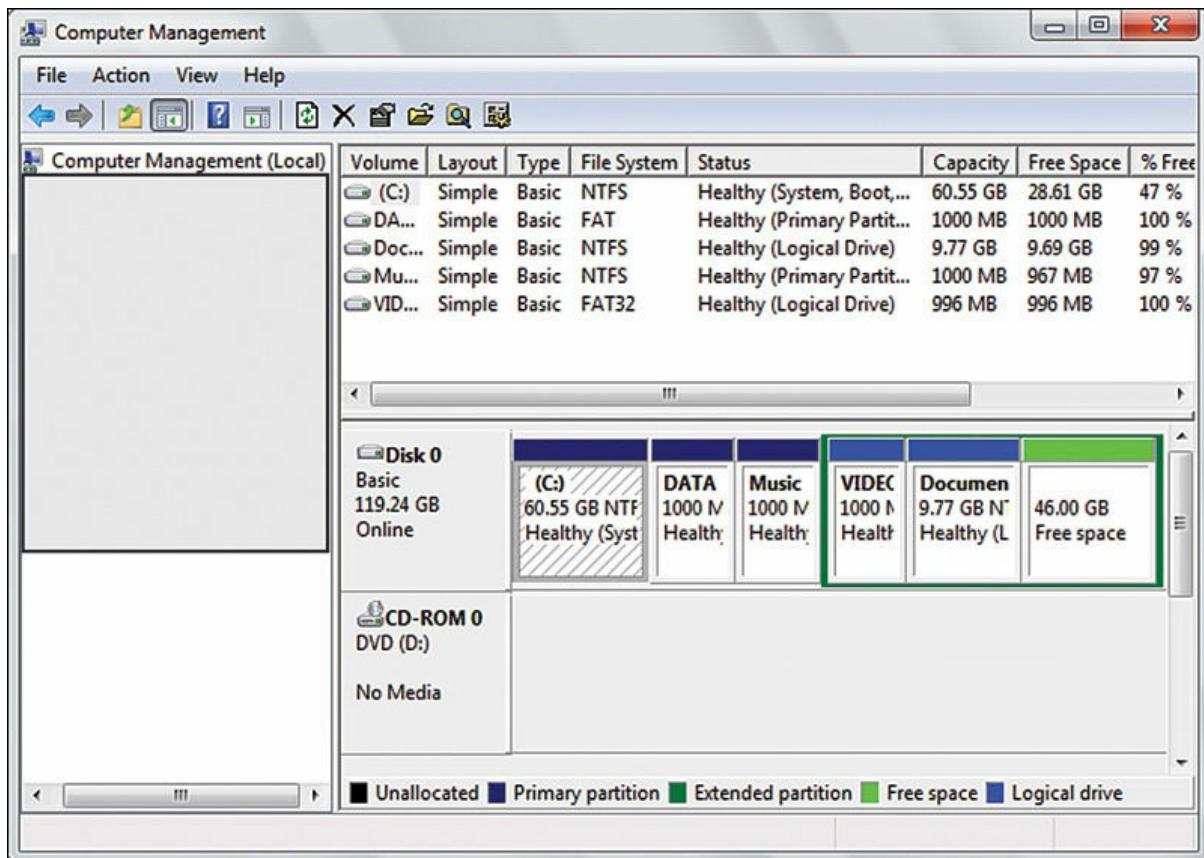
12. Which of the following is the most appropriate question to ask a customer first when attempting to troubleshoot an input device issue over the phone?

- A. Can you describe the steps you have taken?
- B. Have you verified that all USB plugs are secure?
- C. Have you tried turning it off and on again?
- D. Are you sure that the device is plugged in?

Quick Answer: [275](#)

Detailed Answer: [277](#)

13. Examine the following figure. Then answer the question that follows.



Which portion of Computer Management is being displayed in the figure?

- A. Event Viewer
- B. Disk Management
- C. Disk Administrator
- D. DiskPart

Quick Answer: [275](#)

Detailed Answer: [278](#)

14. Which of the following is the correct path if you wanted to disable a service in Windows?

- A. Msconfig > Settings > Services
- B. System Settings > Tools > Services
- C. Control Panel > Services
- D. Control Panel > Administrative Tools > Services

Quick Answer: [275](#)

Detailed Answer: [278](#)

15. Which of the following programs in Windows 7 saves problem

descriptions and solutions?

- A. File History
- B. Problem Reports and Solutions
- C. Action Center
- D. Performance Monitor

Quick Answer: [275](#)

Detailed Answer: [278](#)

16. A co-worker tells you that a work PC has become infected with a virus. Which of the following statements best describes the first step you should take to remedy the problem?

- A. Check for system security patches.
- B. Perform an antivirus program scan.
- C. Boot the PC into Safe Mode.
- D. Remove the PC from the network.

Quick Answer: [275](#)

Detailed Answer: [278](#)

17. A customer reports to you that a newly issued smart card does not work in a laptop. You try your smart card in the laptop, and it works without any problems. Which of the following statements best describes the most likely solution to the problem?

- A. Perform a BIOS flash.
- B. Reinstall the OS.
- C. Upgrade the smart card reader firmware.
- D. Replace the smart card reader.

Quick Answer: [275](#)

Detailed Answer: [278](#)

18. A Windows 7 computer has an Experience Index Base score of 3.8. The technician discovers that the computer has the following:

Performance index RAM1GB4.6Video3D3.8CPU2,4GHz4.2.

The technician upgrades the memory to 2 GB and gets the following results:

Performance index RAM2GB5.0Video3D3.8CPU2,4GHz4.2.

But the Windows Experience Index Base score is still at 3.8. Which

of the following can the technician do to improve the performance index Base score?

- A. Double the RAM again.
- B. Upgrade the CPU to 3 GHz.
- C. Increase the resolution on the screen.
- D. Upgrade the video card.

Quick Answer: [275](#)

Detailed Answer: [278](#)

19. Which of the following commands enables you to copy a file without prompts?

- A. Copy /Z
- B. Xcopy
- C. Copy /Y
- D. Copy /A

Quick Answer: [275](#)

Detailed Answer: [278](#)

20. Which of the following is the best Windows utility to back up important system settings without requiring external storage?

- A. Msconfig
- B. Task Manger
- C. System Protection
- D. Xcopy

Quick Answer: [275](#)

Detailed Answer: [278](#)

21. Examine the following Windows 7 figure. Then answer the question that follows.

The screenshot shows the WinMSD application window. The menu bar includes File, Edit, View, Help. The left sidebar has categories: System Summary, Hardware Resources (Conflicts/Sharing, DMA, Forced Hardware, I/O, IRQs, Memory), Components, and Software Environment. The main table lists hardware resources with columns: Resource, Device, and Status. A search bar at the bottom allows for finding specific hardware by resource address.

Resource	Device	Status
0x000003C0-0x000003DF	2nd generation Intel® Core™ processor ...	OK
0x000003C0-0x000003DF	ASUS EAH5450 Series	OK
0x000003E0-0x00000CF7	PCI bus	OK
0x00000400-0x00000453	System board	OK
0x00000454-0x00000457	Motherboard resources	OK
0x00000458-0x0000047F	System board	OK
0x000004D0-0x000004D1	Motherboard resources	OK
0x00000500-0x0000057F	System board	OK
0x00000D00-0x0000FFFF	PCI bus	OK
0x00001180-0x0000119F	System board	OK
0x0000D000-0x0000D0FF	VIA 1394 OHCI Compliant Host Controller	OK
0x0000D000-0x0000D0FF	Intel(R) 6 Series/C200 Series Chipset Fam...	OK
0x0000E000-0x0000EFFF	2nd generation Intel® Core™ processor ...	OK
0x0000E000-0x0000EFFF	ASUS EAH5450 Series	OK

Which window are we looking at, and what is highlighted?

- A. WinMSD—I/O setting of IEEE 1394 controller
- B. System Information—I/O setting of IEEE 1394 controller
- C. Device Manager—I/O setting of IEEE 1394 controller
- D. System Properties—I/O setting of IEEE 1394 controller

Quick Answer: [275](#)

Detailed Answer: [279](#)

22. You are working just outside a server room that is being built, and you hear a loud popping sound from inside. As you enter the server room, you notice an electrician lying on the floor with an electrical cord in his hand. Which of the following statements best describes the first step you should take to remedy the problem?

- A. Call 911.
- B. Call the building supervisor.
- C. Pull the electrician away from the cord.
- D. Turn off the electrical power at the source.

Quick Answer: [275](#)

Detailed Answer: [279](#)

23. Your boss wants to encrypt a hard drive that will be storing critical data. Your boss needs to be able to drag and drop folders onto the volume and have them be encrypted in real-time. Which encryption technique should you suggest?

- A. BitLocker
- B. PKI
- C. TPM
- D. Kerberos

Quick Answer: [275](#)

Detailed Answer: [279](#)

24. Which of the following file extensions will start the program installation process in Windows?

- A. *.INI
- B. *.CFG
- C. *.SYS
- D. *.EXE

Quick Answer: [275](#)

Detailed Answer: [279](#)

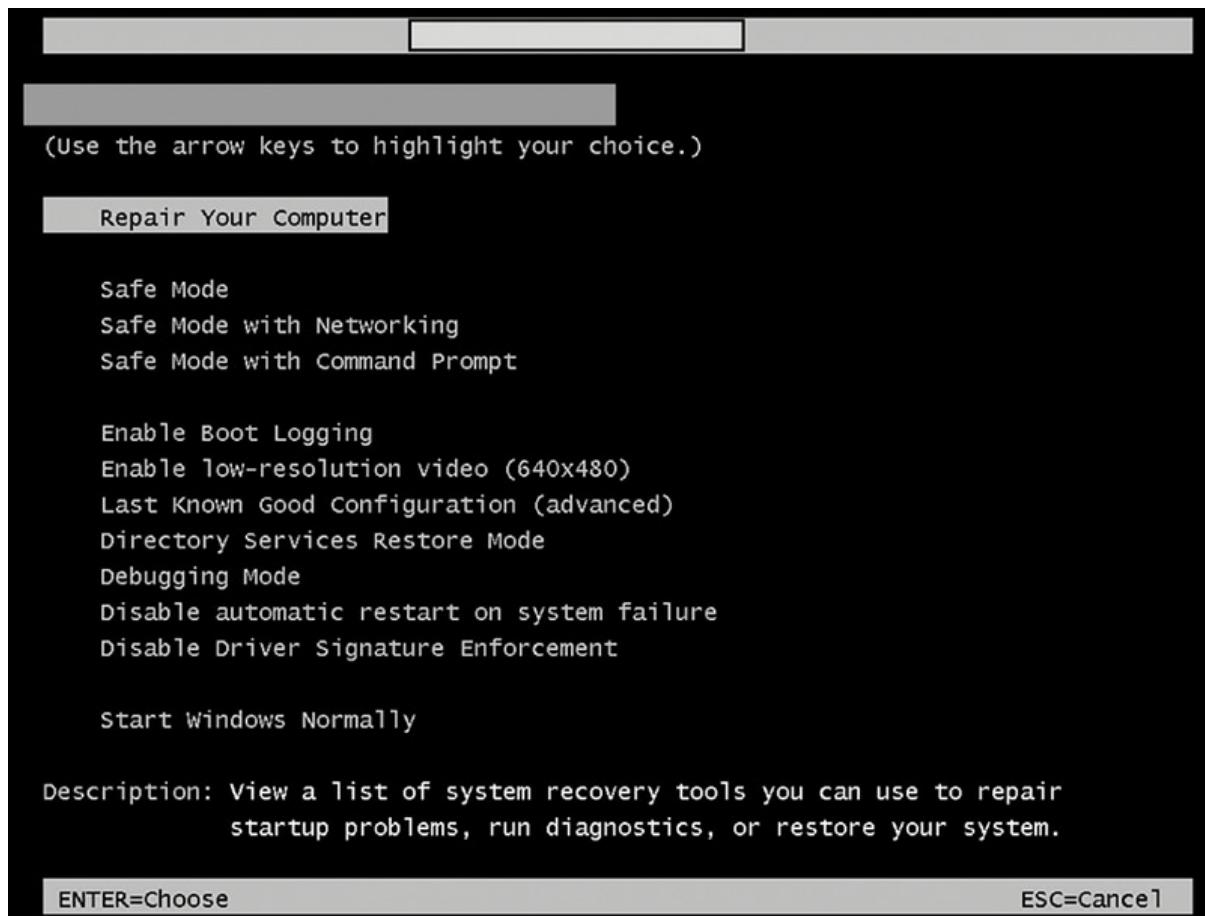
25. Your boss asks you to troubleshoot a computer with a virus. Which of the following statements best describes the first step you should take to remedy the problem?

- A. Run a System Restore.
- B. Identify the malware.
- C. Roll back drivers.
- D. Research malware types.

Quick Answer: [275](#)

Detailed Answer: [279](#)

26. Examine the following figure. Then answer the question that follows.



What are we looking at in the figure?

- A. System Recover Options
- B. Regedit
- C. ABOM
- D. MSCONFIG

Quick Answer: [275](#)

Detailed Answer: [279](#)

27. User A is part of the Users Group on a Windows computer. User A attempts to access files on a UNC path: \\server\fileshare. Fileshare has the following share permissions:

Administrators—Full Control

Users—Read Only

Guests—No Access

However, the directory on the hard drive where the share is located has the following permissions:

Administrators—Full Control

Users—Change

Guests—No Access

Which level of access will the account User A have?

- A.** Read Only
- B.** Change
- C.** Full Control
- D.** No Access

Quick Answer: [275](#)

Detailed Answer: [280](#)

28. Your boss wants to implement BitLocker on yet a second laptop for traveling purposes. Which of the following should be performed before implementing BitLocker?

- A.** Enable TPM in the BIOS/UEFI.
- B.** Disable UAC.
- C.** Defrag the hard drive.
- D.** Convert the file system to NTFS.

Quick Answer: [275](#)

Detailed Answer: [280](#)

29. One of your customers has a defective disk. Which command can be used to extract readable information?

- A.** Recover
- B.** Replace
- C.** Convert
- D.** REM

Quick Answer: [275](#)

Detailed Answer: [280](#)

30. Which of the following are advantages of Xcopy over Copy? (Select the two best answers.)

- A.** The ability to copy files off of a mapped network drive
- B.** The ability to copy NTFS permissions
- C.** The ability to copy files and decrypt them
- D.** The ability to copy entire folder structures
- E.** The ability to copy entire folder structures to remote computers

Quick Answer: [275](#)

Detailed Answer: [280](#)

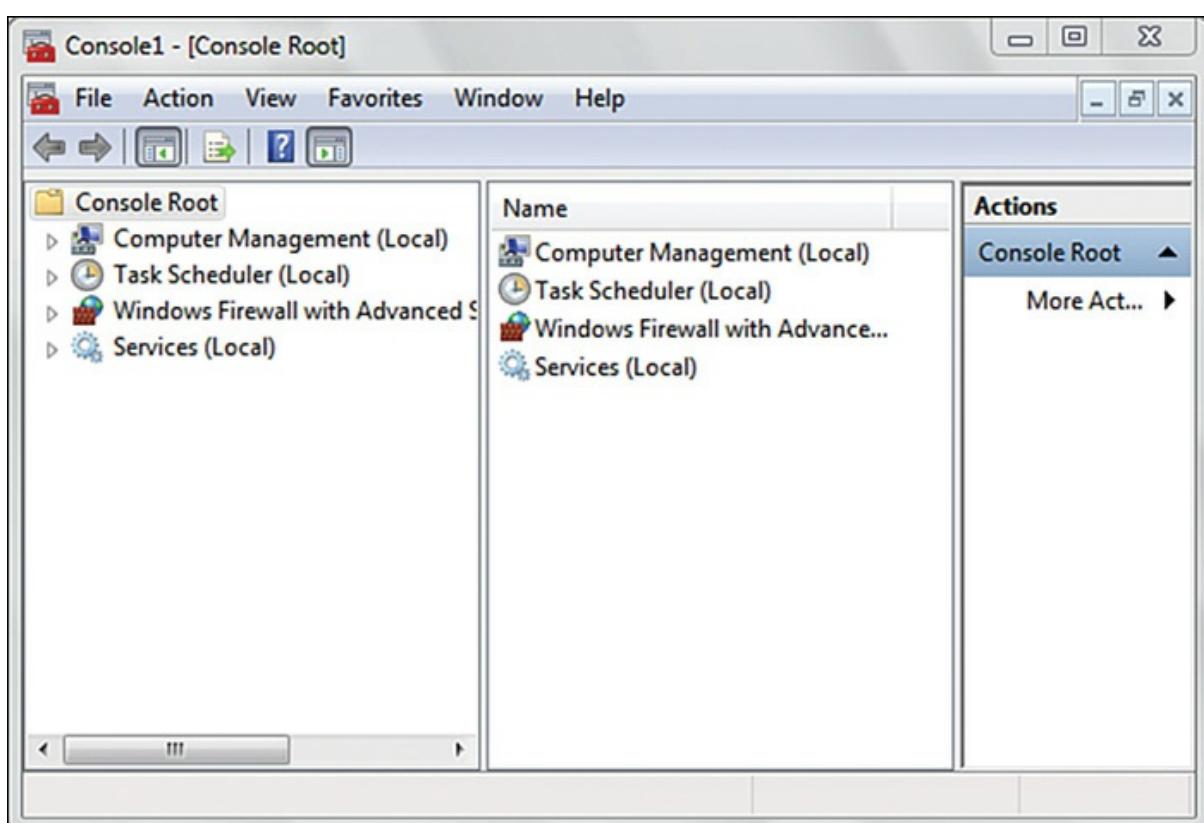
31. You have been asked to load a copy of the company's purchased software on a personal computer. Which of the following statements best describes the first step you should take to remedy the problem?

- A. Verify that the install is allowed under the company's licensing agreements.
- B. Notify the company's owner of the breach.
- C. Advise the individual that downloading unlicensed software is illegal.
- D. Leave the premises and call local law enforcement.

Quick Answer: [275](#)

Detailed Answer: [280](#)

32. Examine the following figure. Then answer the question that follows.



Which of the following describes how to navigate to the application shown in the figure?

- A. Run > Console1
- B. Right-click Start and select Manage

- C. Run > compmgmt.msc
- D. Run > MMC

Quick Answer: [275](#)

Detailed Answer: [281](#)

33. Your friend is playing the latest first-person game on a PC, but the screen is pausing during game play. Your friend has a high-end graphics card and the maximum memory for the motherboard. Which of the following statements best describes how to remedy the problem?

- A. Upgrade the drivers.
- B. Reinstall the OS.
- C. Replace the hard drive.
- D. Reinstall the game.

Quick Answer: [275](#)

Detailed Answer: [281](#)

34. A user calls and complains that he cannot get onto the Internet, although he could just minutes before. Which of the following statements best describes how to properly respond to the user?

- A. “What is your IP address?”
- B. “Wait 10 minutes, and then try it again.”
- C. “Do you remember the last thing that you did?”
- D. “Let me get my supervisor.”

Quick Answer: [275](#)

Detailed Answer: [281](#)

35. You have been asked to move data from one laptop to another, each of which has EFS functioning. Which of the following statements best describes the first step you should take to remedy the problem?

- A. Give the user of the second laptop administrator privileges.
- B. Export the user’s certificate.
- C. Disable networking.
- D. Convert the partition to FAT32.

Quick Answer: [275](#)

Detailed Answer: [281](#)

36. A technician you work with just finished installing AV software on a PC. Which of the following statements best describes the first step the technician should take to remedy the problem?

- A.** Update the AV signatures.
- B.** Remove infected files.
- C.** Run a full scan.
- D.** Quarantine infected files.

Quick Answer: [275](#)

Detailed Answer: [281](#)

37. Which of the following statements best describes how to confirm that a new virus definition is authentic?

- A.** Check the file owner.
- B.** Check the creation date.
- C.** Check the file version.
- D.** Check the hash key.

Quick Answer: [275](#)

Detailed Answer: [281](#)

38. A customer is having a hard time describing a computer problem. You are not sure what the problem is or where it is occurring. Which of the following statements best describes how to remedy the problem?

- A.** Offer various different repair options.
- B.** Use computer jargon to help relax the customer.
- C.** Ask the customer to slowly repeat what the problem is.
- D.** Tell the customer that you have to leave and that the problem will be fixed soon.

Quick Answer: [275](#)

Detailed Answer: [281](#)

39. Which type of malware appears to perform desired functions but is actually performing malicious functions behind the scenes?

- A.** Virus
- B.** Trojan
- C.** Spyware

D. Rootkit

Quick Answer: [275](#)

Detailed Answer: [281](#)

40. The Disk Management utility lists a disk as “Foreign.” Which of the following statements best describes how to make the disk usable?

- A. Convert the disk to basic.
- B. Convert the disk to dynamic.
- C. Import the disk.
- D. Set the disk to active.

Quick Answer: [275](#)

Detailed Answer: [282](#)

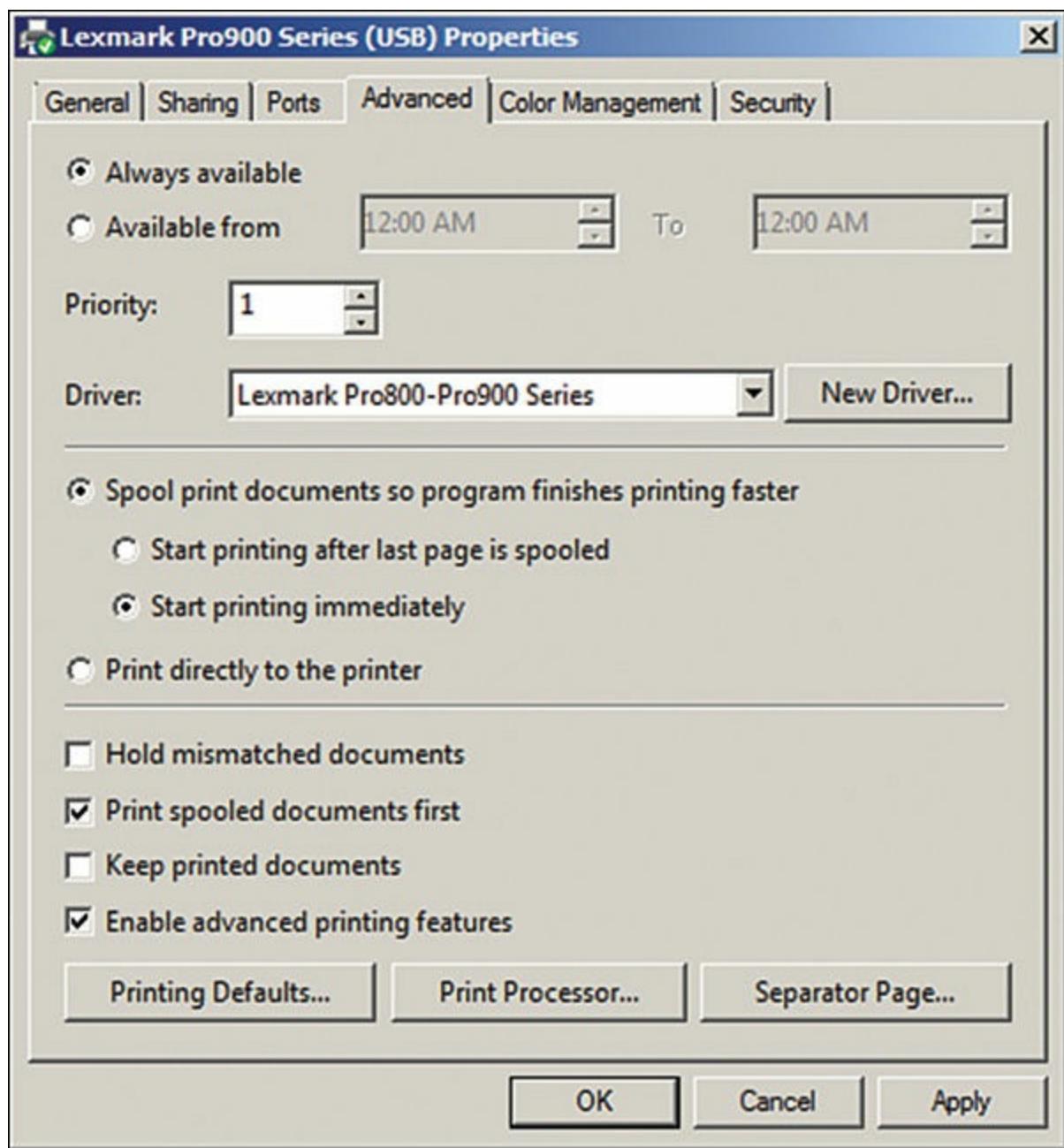
41. Which of the following statements best describes how to reach the System Restore utility in Windows 7? (Select the two best answers.)

- A. Start > right-click Computer > Properties > click the System protection link
- B. Start > right-click Computer > Advanced
- C. Run > type systempropertiesprotection.exe
- D. Start > right-click Computer > Properties > click the Advanced system settings link

Quick Answer: [275](#)

Detailed Answer: [282](#)

42. Examine the following figure. Then answer the question that follows.



In Windows 7, using individual Control Panel icons, which of the following steps describes how to navigate to the dialog box in the figure?

- A. Control Panel > Printers > right-click the printer and select Properties > Advanced
- B. Control Panel > Devices and Printers > right-click the printer and select Properties > Ports
- C. Control Panel > Devices and Printers > right-click the printer and select Properties > Ports
- D. Control Panel > Devices and Printers > right-click the printer and select Printer Properties > Advanced

Quick Answer: [275](#)

Detailed Answer: [282](#)

43. Which of the following statements is true?

- A. Authentication can be something a user knows such as a smart card.
- B. Authentication can be something a user is such as a fingerprint.
- C. Authentication can be something a user does such as a PIN or password.
- D. Authentication can be something a user has such as signature.

Quick Answer: [275](#)

Detailed Answer: [282](#)

44. Which of the following is a type of phishing attack that is directed at the CEO of an organization?

- A. Power phishing
- B. Vishing
- C. Whaling
- D. Spear phishing

Quick Answer: [275](#)

Detailed Answer: [282](#)

45. It seems someone has spilled a large amount of coffee in the break room and has not cleaned it up. It is seeping into the server room next door. Which of the following statements best describes the first step you should take to remedy the problem?

- A. Fill out an accident report.
- B. Notify the network administrator.
- C. Start mopping up the mess.
- D. Reference the MSDS.

Quick Answer: [275](#)

Detailed Answer: [282](#)

46. Which type of data purging standard requires seven full passes or rewrites with bit-level erasure software.

- A. Magnetic degausser

- B.** Low-level format
- C.** Peter Gutman security method
- D.** DoD 5220.22-M

Quick Answer: [275](#)

Detailed Answer: [282](#)

47. You are required to implement an organizational policy that states user passwords can't be used twice in a row. Which of the following policies should be configured?

- A.** Minimum password length
- B.** Enforce password history
- C.** Minimum password age
- D.** Complexity requirements

Quick Answer: [275](#)

Detailed Answer: [283](#)

48. Examine the following figure. Then answer the question that follows.



The figure shows the option to set a Passcode in iOS of an iPad. Which of the following steps best represents how to navigate to this screen?

- A. Settings > General > Passcode Lock > Turn Passcode On

- B.** Settings > General > Turn Passcode On
- C.** Settings > Passcode Lock > Turn Passcode On
- D.** Settings > General > Passcode Lock > Enable WPA2 Passcode

Quick Answer: [275](#)

Detailed Answer: [283](#)

49. Which of the following switches skips the process that compares directory entries to the file record segments corresponding to those entries, when running the Chkdsk command?

- A.** Chkdsk /V
- B.** Chkdsk /F
- C.** Chkdsk /I
- D.** Chkdsk /R

Quick Answer: [275](#)

Detailed Answer: [283](#)

50. You are working on a computer in which you just installed a new hard drive. The system already runs Windows. The new hard drive does not appear in Explorer. Which of the following statements best describes the next step you should take to ensure the drive will be recognized by the operating system?

- A.** Reboot the computer.
- B.** Initialize and format the hard drive in Disk Management.
- C.** Configure the drive in the BIOS/UEFI.
- D.** Assign a drive letter to the hard drive in Disk Management.
- E.** Set the drive to active.

Quick Answer: [275](#)

Detailed Answer: [283](#)

51. Which utility displays important messages about solving issues in Windows 8?

- A.** Task Manager
- B.** Windows Defender
- C.** Action Center
- D.** Problem Reports and Solutions

Quick Answer: [275](#)

Detailed Answer: [283](#)

52. A company has Category 6 cabling lying on the floor in several locations. Which of the following statements best describes the most appropriate action to take?

- A. Reroute the cables using a protective material.
- B. Secure the cables to the floor with tape.
- C. Install a wireless network.
- D. Move the computers closer to the server.

Quick Answer: [275](#)

Detailed Answer: [283](#)

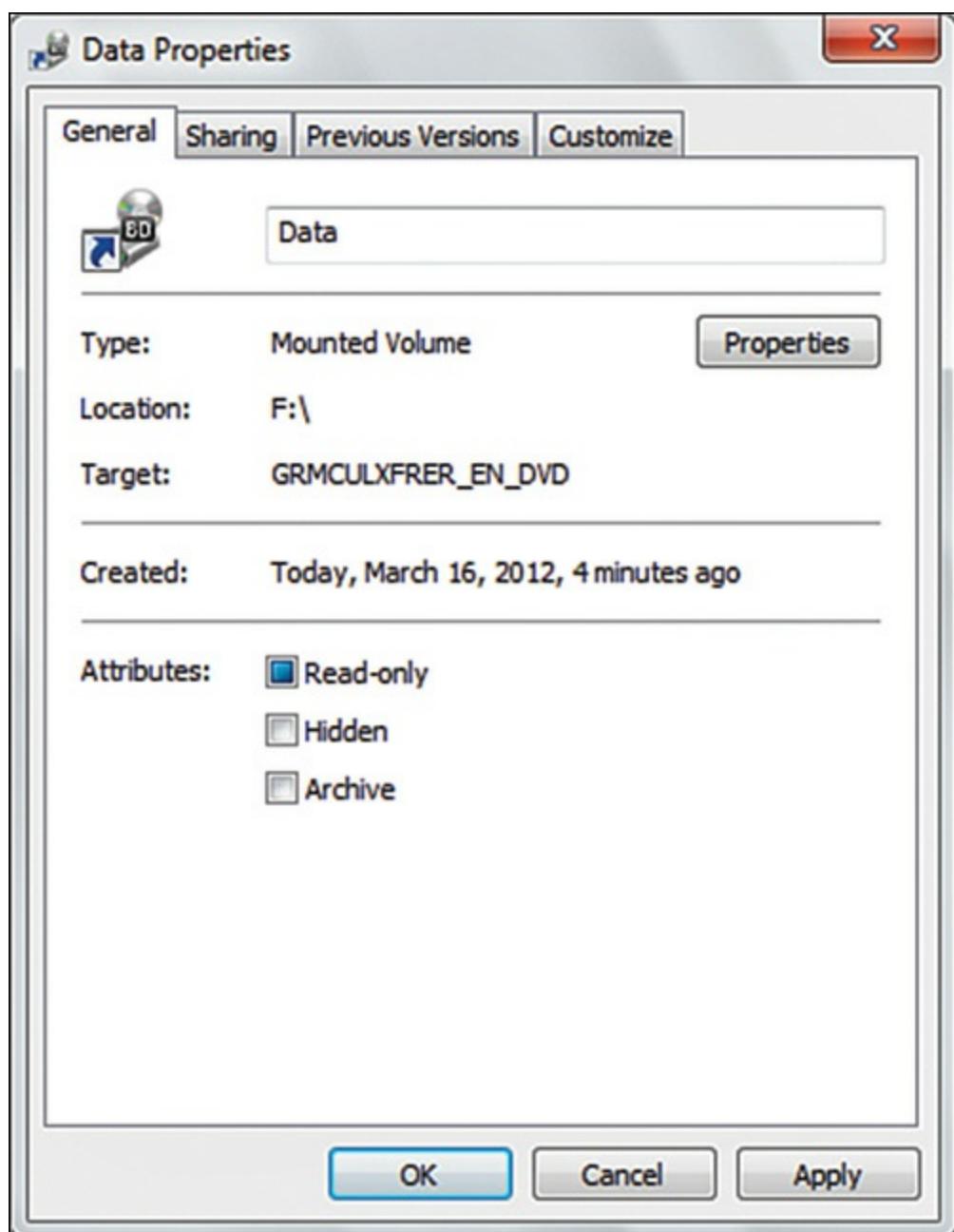
53. A customer has a computer running Windows. The Windows Firewall appears to be causing communications to fail within a certain gaming application even though you set up an exception for the program. You stop the Windows Firewall, but when the computer reboots, the service starts up again. Which of the following tools should be used to disable the Windows Firewall service?

- A. Task Scheduler
- B. System Configuration
- C. System Properties
- D. Local Security Policy

Quick Answer: [275](#)

Detailed Answer: [283](#)

54. Examine the following figure. Then answer the question that follows.



The figure shows a mounted volume. Which of the following is the actual mounted volume and which hard drive folder is it pointing to?

- A. F: and GRMCULXFRER_EN_DVD
- B. Windows 7 DVD and the Data folder
- C. F: and the DVD drive
- D. Data folder and GRMCULXFRER_EN_DVD

Quick Answer: [275](#)

Detailed Answer: [284](#)

55. An attacker is constantly trying to hack into one of your customer's SOHO networks. Which of the following statements best describes

the easiest, most practical way to protect the network from intrusion?

- A. Disable the SSID broadcast.
- B. Install an antivirus server application.
- C. Disconnect the Internet connection.
- D. Install a firewall.
- E. Install an IDS.

Quick Answer: [275](#)

Detailed Answer: [284](#)

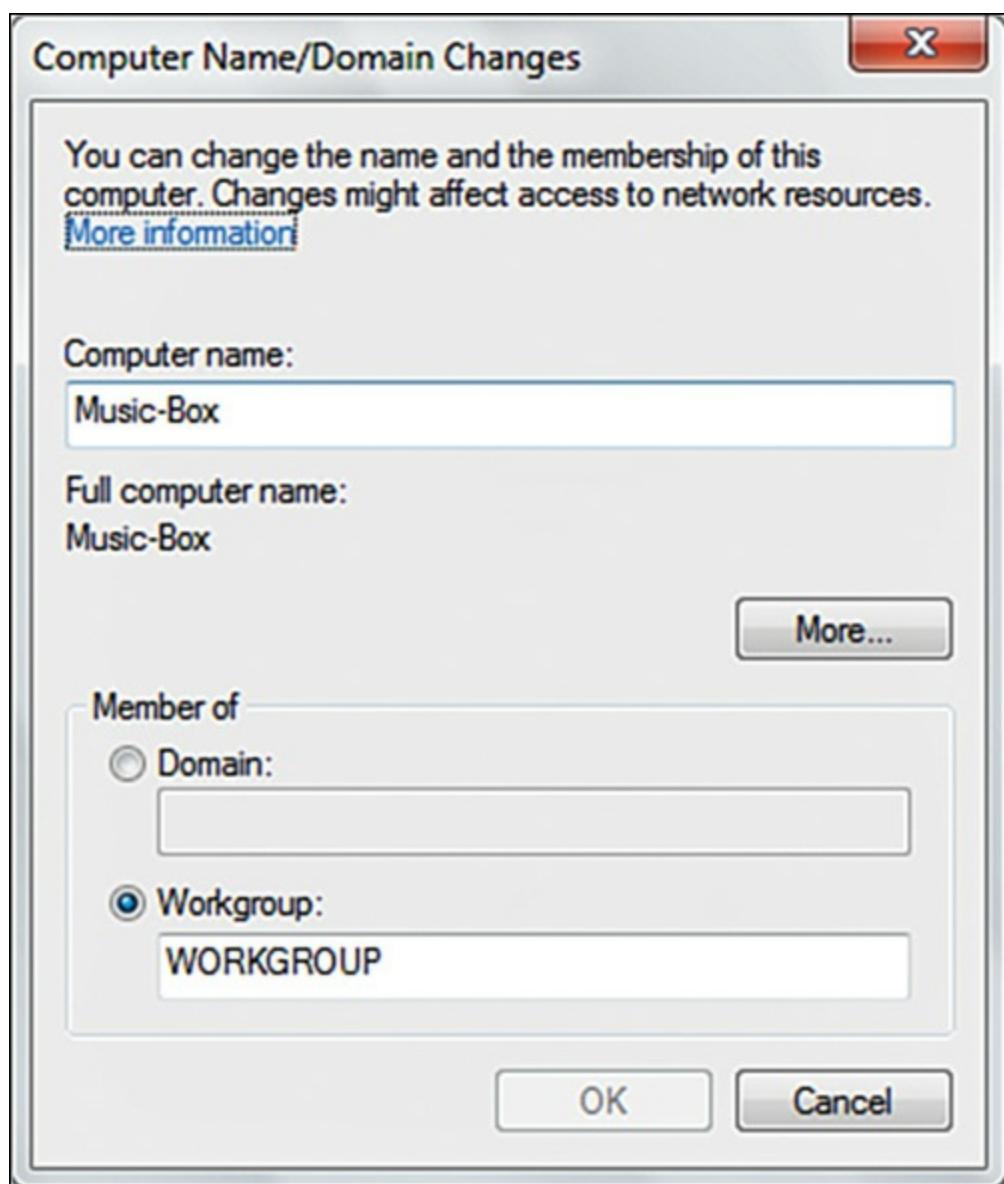
56. When explaining a technical concept to a customer, which of the following is not permissible?

- A. Using analogies
- B. Using visual aides
- C. Using jargon
- D. Limiting the amount of information to what is necessary for the user to know

Quick Answer: [275](#)

Detailed Answer: [284](#)

57. Examine the following figure. Then answer the question that follows.



The figure shows the Computer Name/Domain Changes dialog box in Windows 7. Which of the following steps best represents how to navigate to this window? (Select the two best answers.)

- A. System > Advanced System Settings > Computer Name > Change
- B. System > Advanced System Settings > Advanced > Change
- C. Run > systempropertiescomputername.exe > Change
- D. Run > systempropertiescomputername.exe > Advanced > Change Computer Name

Quick Answer: [275](#)

Detailed Answer: [284](#)

58. Which command in the Linux terminal enables you to find out

information about a wireless network adapter?

- A. ipconfig
- B. regedit
- C. apt-get
- D. iwconfig

Quick Answer: [275](#)

Detailed Answer: [284](#)

59. You have a Windows computer that you wish to write a batch file for. You want the batch file to turn off the computer after a certain amount of time. Which main command should be run in the batch file?

- A. Taskkill
- B. Down
- C. Kill
- D. Shutdown

Quick Answer: [275](#)

Detailed Answer: [284](#)

60. Which switch of the Robocopy command copies subdirectories but skips empty ones?

- A. /E
- B. /B
- C. /S
- D. /DCOPY:T

Quick Answer: [275](#)

Detailed Answer: [285](#)

61. You are on a service call and receive an urgent phone call. Which of the following statements best describes the proper way to respond?

- A. Leave the site and take the call.
- B. Talk with the person while working.
- C. Ask to be excused, and after determining the urgency of the call, go back to work.
- D. Ask to be excused, and after determining that it is not a truly urgent call, get right back to work while talking on the phone.

Quick Answer: [275](#)

Detailed Answer: [285](#)

62. Your organization wants to use a cloud service that will allow developers to program entire applications within a working environment that they can modify as they see fit. Which type of technology should be used?

- A. SaaS
- B. IaaS
- C. PaaS
- D. Community cloud

Quick Answer: [275](#)

Detailed Answer: [285](#)

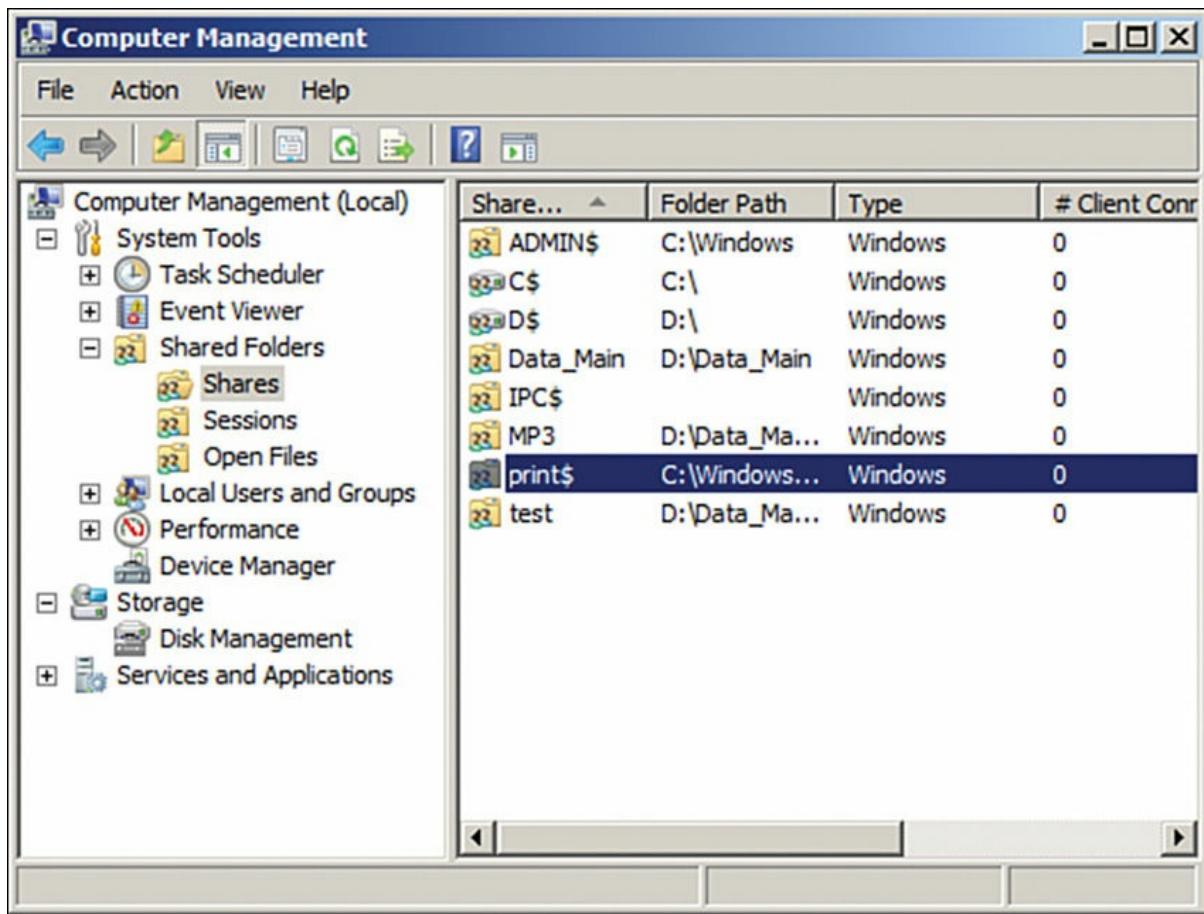
63. A user just returned from another country and cannot connect to the WLAN with a smartphone. Which of the following should be checked first?

- A. Bluetooth conflict
- B. Hotspot configuration
- C. Wi-Fi calling
- D. Airplane mode

Quick Answer: [275](#)

Detailed Answer: [285](#)

64. Examine the following figure. Then answer the question that follows.



The figure shows the list of shares on a Windows 7 computer. Which of the following is the path of the print\$ share?

- A. C:\Windows
- B. C:\Windows\System32
- C. C:\Windows\System32\spool\print\$
- D. C:\Windows\System32\spool\drivers

Quick Answer: [275](#)

Detailed Answer: [285](#)

65. Which of the following are components of dealing with prohibited content? (Select the three best answers.)

- A. First response
- B. Maintaining a positive attitude
- C. Preserving data
- D. Creating a chain of custody
- E. Avoiding distraction

Quick Answer: [275](#)

Detailed Answer: [285](#)

66. A customer is frantic because a mobile device's operating system has crashed. The customer keeps referring to KitKat in excited tones but isn't making much sense. Which OS is the customer referring to?

- A. Windows 10 Mobile
- B. Apple iOS version 8
- C. Android version 4
- D. BlackBerry OS

Quick Answer: [275](#)

Detailed Answer: [285](#)

67. You just installed a customer's new printer and tested it. Which of the following should be performed next?

- A. Recheck all connections.
- B. Bill the customer.
- C. Turn the printer on and off.
- D. Show the customer the printer's basic functionality.
- E. Install a maintenance kit.

Quick Answer: [275](#)

Detailed Answer: [285](#)

68. Which of the following statements best describes how to properly deal with difficult customers?

- A. Do not minimize a customer's problems.
- B. Report through proper channels.
- C. Track evidence through documentation.
- D. Tell the customer to remove confidential documents.

Quick Answer: [275](#)

Detailed Answer: [286](#)

69. Which of the following security threats can be updated remotely from a command center?

- A. Virus
- B. Worm
- C. Spam
- D. Zombie

Quick Answer: [275](#)

Detailed Answer: [286](#)

70. Which of the following is a potential risk associated with WEP when that protocol is used to secure a WLAN?

- A. SSID broadcast
- B. Weak encryption
- C. Data emanation
- D. Zero protection against war driving attacks

Quick Answer: [275](#)

Detailed Answer: [286](#)

71. Your co-worker just installed a new printer, replacing his older one. However, when he tries to print from Microsoft Word, the old printer comes up in the print window. Which of the following statements best describes how to remedy the problem?

- A. Advise him to save the print job by printing to file, and then print the file with the new printer selected.
- B. Advise him to select the new printer from the list every time a document is printed.
- C. Advise him to open the Printers folder, right-click the new printer, and then select Properties > Security Tab > Make This the Default Printer.
- D. Advise him to open the Printers folder, right-click the new printer, and then click Set as Default Printer.

Quick Answer: [275](#)

Detailed Answer: [286](#)

72. Which of the following OSI model layers is where SSL provides encryption?

- A. Network
- B. Application
- C. Transport
- D. Session

Quick Answer: [275](#)

Detailed Answer: [286](#)

73. Which step of the CompTIA A+ troubleshooting theory does “conduct external or internal research” exist within?

- A. Step 1
- B. Step 2
- C. Step 3
- D. Step 4
- E. Step 5
- F. Step 6

Quick Answer: [275](#)

Detailed Answer: [286](#)

74. In which step of the CompTIA A+ procedure for malware removal should anti-malware programs be updated?

- A. Identify malware symptoms.
- B. Quarantine the infected system.
- C. Remediate infected systems.
- D. Schedule scans.

Quick Answer: [275](#)

Detailed Answer: [287](#)

75. Which of the following social engineering attacks relies on impersonation in an attempt to gain personal information?

- A. Hoaxes
- B. Phishing
- C. Dumpster diving
- D. Shoulder surfing

Quick Answer: [275](#)

Detailed Answer: [287](#)

76. A user's smartphone is overheating. Which of the following is the most likely cause?

- A. Faulty GPS program
- B. Damaged battery
- C. Proper ventilation
- D. Virus
- E. Damage to the CPU

Quick Answer: [275](#)

Detailed Answer: [287](#)

77. Which of the following is the best solution for repairing a hard drive when a computer displays an “NTLDR is missing error” upon booting?

- A. Recovery Console with the `fixmbr` command
- B. Recovery Console with the `fixboot` command
- C. Recovery Console with the `chkdsk` command
- D. Recovery Console with the `bootcfg /rebuild` command

Quick Answer: [275](#)

Detailed Answer: [287](#)

78. You are designing the environmental controls for a server room that contains several servers and other network devices. Which of the following statements best describes the role of an HVAC system in this environment? (Select the two best answers.)

- A. It shields equipment from EMI.
- B. It provides isolation in case of a fire.
- C. It provides an appropriate ambient temperature.
- D. It maintains appropriate humidity levels.
- E. It vents fumes from the server room.

Quick Answer: [275](#)

Detailed Answer: [288](#)

79. A Faraday cage prevents the usage of which of the following items?

- A. USB flash drives
- B. Uninterruptible power supplies
- C. Cell phones
- D. Wired keyboards

Quick Answer: [275](#)

Detailed Answer: [288](#)

80. You have some DLLs and ActiveX controls that need to be troubleshooted. Which command can manipulate these?

- A. Regedit
- B. Regsvr32
- C. ODBC32

D. Regedt32

Well, you made it. Congratulations! Check your answers and read through the explanations carefully!

Quick Answer: [275](#)

Detailed Answer: [288](#)

Quick-Check Answer Key

- [1. A](#)
- [2. C](#)
- [3. C](#)
- [4. C](#)
- [5. D](#)
- [6. D](#)
- [7. A](#)
- [8. A](#)
- [9. A, D](#)
- [10. D](#)
- [11. A](#)
- [12. A](#)
- [13. B](#)
- [14. D](#)
- [15. C](#)
- [16. D](#)
- [17. C](#)
- [18. D](#)
- [19. C](#)
- [20. C](#)
- [21. B](#)
- [22. D](#)
- [23. A](#)
- [24. D](#)
- [25. B](#)
- [26. C](#)

- 27. A
- 28. A
- 29. A
- 30. B, D
- 31. A
- 32. D
- 33. A
- 34. C
- 35. B
- 36. A
- 37. D
- 38. C
- 39. B
- 40. C
- 41. A, C
- 42. D
- 43. B
- 44. C
- 45. B
- 46. D
- 47. B
- 48. A
- 49. C
- 50. B
- 51. C
- 52. A
- 53. B
- 54. B
- 55. D
- 56. C
- 57. A, C
- 58. D
- 59. D

- [60.](#) C
- [61.](#) C
- [62.](#) C
- [63.](#) D
- [64.](#) D
- [65.](#) A, C, D
- [66.](#) C
- [67.](#) D
- [68.](#) A
- [69.](#) D
- [70.](#) B
- [71.](#) D
- [72.](#) D
- [73.](#) B
- [74.](#) C
- [75.](#) B
- [76.](#) A
- [77.](#) B
- [78.](#) C, D
- [79.](#) C
- [80.](#) B

Answers and Explanations

- 1. Answer: A.** The Type 1 hypervisor is the bare metal, or native hypervisor. It runs directly on the host computer's hardware. Examples include Microsoft Hyper-V, VMware ESXi, and Citrix XenServer. This is required for true virtualization workstations. Type 2 hypervisors run *within* another operating system. Examples of this include Microsoft Virtual PC, Windows XP Mode (which runs in a Virtual PC window within Windows 7), and VirtualBox. These do not run nearly as fast as type 1 hypervisors and so are used for limited purposes. For example, if a company wanted to run Windows Server 2012 in a virtual environment but have it be an actual server on the network, it should run in a Type 1 hypervisor. But if you are learning how to use Windows 7 or 8—for example, in a lab

environment—the type 2 hypervisor would probably be fine.

- 2. Answer: C.** Virtual private networks (VPNs) rely on a tunneling protocol such as PPTP or L2TP to create a secure connection between a network and a remote computer or group of computers. WWAN is another name for cellular Internet access. 4G LTE is a fast, wireless cellular service used over large geographic areas—most phones use this standard in the United States and many other countries. WLAN is the wireless LAN that is created when you implement a wireless access point or create an ad-hoc network of devices.
- 3. Answer: C.** Entering %temp% in the Run prompt displays a folder with the current user's temporary files. For example, in Windows this would show the C:\Users\%username%\AppData\Local\Temp folder. Nothing will be added or changed. Simply the folder will be displayed in a Windows Explorer or File Explorer window. The operating system's temporary folder is located at C:\Windows\Temp.
- 4. Answer: C.** A surge suppressor (or surge protector) uses metal-oxide varistors (MOVs) to protect against surges and spikes. They protect each outlet and port on the device, but they do not last forever. Most manufacturers recommend that after several years of use you replace them. Power strips do not have these and do not protect against surges and spikes, though the device might have trip functionality and have to be reset in the case of an electrical problem. Power supplies are located within the computer; they do not have MOVs. A multimeter is used to test outlets and wires. An MOV can also be tested by a multimeter by testing its resistance.
- 5. Answer: D.** Attrib -H *.* unhides all of the files in the folder. The attrib command allows you to work with four different file attributes that I like to refer to as RASH. *R* stands for Read-only, *A* = Archive, *S* = System, and *H* = Hidden. Using a minus sign will remove the attribute, while a plus sign will add the attribute. Since the files were already hidden, we needed to use the minus sign to remove the attribute and be able to view the files. *.* means all the files with all extensions within that particular directory. Check out the attrib command in the Command Prompt for yourself by typing attrib /?. Ray is always doing interesting things in my books.
- 6. Answer: D.** The standard user cannot install software or make changes to the system without knowing an administrative login.

Administrators have full control over a system. Power users in Windows XP were able to install programs and device drivers but are found in newer versions of Windows only for backward compatibility. Remote Desktop users can remote into other machines in order to control them from another location.

7. Answer: A. Chkdsk /R locates bad sectors and recover the information from them. /F fixes errors but doesn't locate bad sectors and recover the information from them. /C and /I skip certain checks of the volume (in this case C:), which ultimately reduces the time it takes to check the volume.

8. Answer: A. Every user profile gets a Desktop folder by default. This folder is located within the user profile folder, which is shown in the answer as a variable %username%. In a standard Windows 8/7/Vista configuration, the Documents and Settings and System Volume Information folders are hidden and access is denied. The System32 folder is inside the Windows folder, not the Users folder. The no-longer-supported Windows XP used Documents and Settings as the main user folder, but Windows Vista/7/8 changed that by creating a junction from that folder to the Users folder. Now in Vista/7/8 the Documents and Settings folder is protected, but you have limited access to the Users folder.

9. Answers: A and D. If a user cannot print to a brand-new printer, yet everyone else can print to it, you should check if the printer is installed on that user's computer and if it is set as the default printer. If the printer has not yet been installed, there will be no print queue to clear. However, if the printer has been installed, then the next thing to check would be if the print queue has failed. You could also check the Print Spooler. If the user was able to print to an older printer that was also shared by other users in the workgroup, then you should not have to change the user's password or permissions.

10. Answer: D. The best option in this scenario would be to deny read access to the Accounting folder for Bill through shared access security. You would not use local access security because the folder is shared from a network server within your Active Directory domain. Also, if you remove Bill from all domain groups that have access to the accounting folder, Bill will probably lose access to other folders as well. If you deny read access to the accounting folder for any group that Bill is a member of, you will probably impact other users on the network negatively.

11. Answer: A. Compressed air, if used periodically inside the computer, can help to prevent the hardware faults that occur. Most likely, the warehouse is not the cleanest, and the computer is sucking in dirt 24 hours a day. If you take the computer outside, remove the cover, and carefully blow out the dust bunnies with compressed air, you might increase the life expectancy of the hardware components. Other ways to help prevent this problem are to install a filter in front of the computer where air is drawn into the system, and to enable hibernation of the computer during off hours. During this time, the computer does not draw any air into the case, limiting the intake of dust, dirt, and other pollutants. Antistatic wrist straps are necessary when installing devices, and if they are not used, devices could become damaged, but the frequency of the issues in the question points to environmental conditions, and not ESD. A rescue disk (or rescue disc or repair disc) is used to repair an OS when a catastrophic stop error or other similar error occurs. It rebuilds the OS so that it can function again. Because in this scenario the problem is hardware-related, a rescue disk does not help the situation.

12. Answer: A. The key here is what you ask the customer *first*. You should first ask the customer to describe the steps taken so far. By asking this, you will probably elicit a lot of the other listed answers from the customer. Remember, you are not accusing the user of anything; you are simply asking what the customer did so far. You don't even know if the device is USB or not. Plus, some devices are not turned on and off. They simply plug into the computer and either work or don't. And when you ask what the customer has done so far, the person will probably tell you that she plugged the device in. The moral of this question is to get the whole story before asking questions that are arbitrary—and possibly unnecessary.

13. Answer: B. The Disk Management component of Computer Management is being displayed in the figure. You can tell because it shows each disk and the volumes within each disk. The Event Viewer houses log information for the system, applications, and security auditing events. Disk Administrator is the predecessor to Disk Management in the old Windows NT days. DiskPart is the command-line tool used to create and modify partitions on the hard drive.

14. Answer: D. The correct path is Control Panel > Administrative

Tools > Services. Of course, there are lots of other ways to get to the Services console window, but you should know the Control Panel paths for the exam. In addition, there are lots of ways to shut off services; you should know as many of them as you can, such as in the Task Manager or in the Command Prompt. The path Msconfig > Settings > Services is not valid because there is no Settings option. System Settings > Tools > Services is also an invalid path. Finally, Services cannot be accessed directly from Control Panel.

- 15. Answer: C.** The Action Center in Windows 7 can save problem descriptions and solutions; this is done in the archived messages section. File History is the backup program built into Windows 8/8.1. The Action Center could be considered the successor to the Problem Reports and Solutions of Windows Vista. Performance Monitor is a program that tracks how much of your device's resources are being utilized—for example, what percentage of the processor is used.
- 16. Answer: D.** First thing: remove the PC from the network so that the virus (if there is one) doesn't spread to other systems! Then you can safely go about troubleshooting that system by performing an AV scan while in Safe Mode and checking for system security updates.
- 17. Answer: C.** First, try upgrading the smart card reader firmware. A smart card is an intelligent card that authenticates a user. Newer smart cards with more intelligence are constantly being developed. These newer cards might not be readable by a smart card reader until it is updated. In rarer cases you might have to replace the smart card reader. A BIOS flash should be necessary only if the smart card reader is not recognized. Reinstalling the OS should be avoided at all costs, but it might be necessary if the laptop has a very old version of Windows.
- 18. Answer: D.** Upgrade the video card. The Windows Experience Index Base score is based on the lowest component score. In this case that is the video card. You'll note that there is a number after each component. After the RAM upgrade those numbers are RAM: 5.0, Video: 3.8, and CPU: 4.2. The video score is the index. So, the lowest common denominator should be upgraded. Increasing the resolution on the screen won't have an effect, or it will cause the index for video to go down.
- 19. Answer: C.** Copy /Y suppresses prompting of overwrite confirmations. Copy /Z copies networked files in restartable mode.

Xcopy is used to easily copy entire directories of data to another location. Copy /A allows you to indicate an ASCII text file to copy.

- 20. Answer: C.** System Protection is a feature that creates and saves data about the computer's system files and settings. It does this by creating restore points. This is accessed by going to the System Properties dialog box and clicking the System Protection tab. External storage is not necessary for these; they are automatically stored in the system volume. Msconfig is used to modify the way Windows boots and the services that are loaded at startup. The Task Manager is used to view system performance, enable/disable applications, stop services, and kill processes. Xcopy is used to copy entire directory trees of data but not settings.
- 21. Answer: B.** The figure displays the System Information window with the IEEE 1394 (and I/O setting) highlighted. System Information can be accessed from Start > All Programs > Accessories > System Tools (in Windows 7/Vista) or by accessing Run and typing msinfo32 in any version of Windows.
- 22. Answer: D.** If the electrician is being electrocuted, you do not want to touch him. Because it appears that the power is still on, turn it off at the source (if it is not near the sparking wire). This is usually the circuit breaker. Then call 911. Do not move the cord or the electrician; you could be next.
- 23. Answer: A.** BitLocker is a type of WDE: whole-disk encryption. It encrypts all of the contents that are created on it or copied to it in real-time. It requires a trusted platform module (TPM) on the motherboard or an encrypted USB flash drive. Only Windows 8 Pro and Enterprise, Windows 7 Ultimate and Enterprise, and Windows Vista Ultimate and Enterprise, support BitLocker when used in this manner. Other lesser versions of Windows are compatible with BitLocker To Go for reading encrypted documents from USB flash drives.
- 24. Answer: D.** *.EXE refers to any file with the .EXE extension. .EXE is short for executable. When you want to run a program, it is usually started with a file that has a .EXE extension. For example, to start Microsoft Word, the winword.exe executable is initiated. And for installing programs, the most common is setup.exe. .INI files are initialization files. CFG is short for configuration file. These might list commands and parameters for a program. Often, .INI and .CFG

files can be manipulated in Notepad because they are *text based* (but not text or .txt files). .SYS files are system files—for example, pagefile.sys. The .SYS extension was used extensively back in the days of DOS, but newer versions of Windows tend to have system files with .dll and .exe extensions.

25. Answer: B. The first thing you should do is identify the malware. (BTW, if the computer is on the network, disconnect it first.) Then, you can research that malware and any possible cures by searching the Internet and accessing your AV provider's website. Rolling back drivers should not be necessary, especially if you find it necessary to run a System Restore at some point. Remember your best practices procedure for malware removal!

26. Answer: C. We are looking at the Advanced Boot Options Menu (ABOM) screen in Windows 7 (it is similar in Windows Vista). This is the screen that comes up if you press F8 while Windows is booting, and it's how you would access Safe Mode and a host of other booting options. In Windows 8, the ABOM is known as the Startup Settings screen and cannot be accessed with F8 unless you modify the system with the following command:

`bcdedit /set {default} bootmenupolicy legacy`

The System Recovery Options (Windows RE) can be accessed by booting to the Windows DVD (or USB image, or recovery drive) and selecting Repair. Regedit (regedit.exe) is the Registry Editor utility in Windows. Msconfig is a program within Windows that allows you to modify the way the system boots, disable programs, and disable services.

27. Answer: A. User A will end up having the Read Only level of access to the share. Generally, a user gets the more restrictive level of access. The only thing that is different between the share's permissions and the parent directory's permissions is the level of control for the Users group. Normally, a share will obtain its permissions from the parent folder. That is, unless that option is uncheckmarked in the properties of the folder; then, the folder can be reconfigured for whatever permissions an admin wants to set for it. That must be what happened in the scenario. Administrators get Full Control access to almost everything by default. And Guests get No Access to just about everything by default. So the only possibilities for this question were Change and Read Only. Again, in general, the typical Standard user account receives the more restrictive level of

permissions.

- 28. Answer:** A. Before implementing the BitLocker solution in Windows, you should enable the trusted platform module (TPM) in the BIOS. This is the chip on the motherboard that includes the encryption code. UAC is User Account Control, a separate security option in Windows that checks if users have administrative permissions before allowing them to carry out administrative tasks. Defragmenting the hard drive is not necessary, but it can't hurt to at least analyze the drive and see if it needs to be defragged. Defragging a drive that requires it can increase performance. BitLocker works on FAT16, FAT32, NTFS, and exFAT partitions, so no need to convert the file system.

- 29. Answer:** A. The Recover command can recover readable information from a bad or defective disk. The disk should be slaved to a working computer to get back the data. The Replace command replaces source and destination files but does not recover lost information. Convert changes a file system from FAT to NTFS without losing data. REM records comments in a batch file (.bat) or within config.sys, a root file not typically used in Windows.

- 30. Answers:** B and D. Xcopy can copy NTFS permissions and copy entire folder (directory) structures. Normally, when a file is copied—for example, in Windows Explorer or File Explorer—the file loses its permissions and takes on the permissions of the new parent folder. That is also the case with the Copy command. Xcopy and Robocopy can be used to transcend this rule. Both Xcopy and Copy can copy files off of a mapped network drive, but neither can copy files while decrypting them. Neither Copy or Xcopy can copy entire folder structures to remote computers, but Robocopy can.

- 31. Answer:** A. You should first verify that the installation is allowed under a company's licensing agreement. It probably isn't, but you should check first. Most organizations do not allow purchased software to be installed on an employee's home computer. If it is against organization policy, then you should notify your supervisor. There are many types of licenses that you should be aware of including end-user licensing agreements (EULA), digital rights management (DRM), commercial and enterprise licenses (such as client access licenses or CALs), open source versus closed source (i.e. Android versus iOS), personal licenses, and so on. Again, be sure to follow and incorporate corporate end-user policies and

security best practices when it comes to these types of licenses.

32. Answer: D. The figure shows the Microsoft Management Console (MMC). You can tell because it is given the default name “Console1” and has multiple other console windows within it, including Computer Management (which can be opened itself by typing compmgmt.msc). The MMC is accessed by going to Run, and typing MMC. But when it is first opened, it is not populated with any snap-ins.

33. Answer: A. If you see video issues such as pausing during game play, upgrade the video drivers. Make sure that you download the latest video driver from the manufacturer’s website. Gamers cannot rely on Microsoft drivers, especially FPS gamers! Sometimes reinstalling a game is necessary but shouldn’t be in this scenario. Replacing the hard drive and reinstalling the OS are drastic and unnecessary measures for this problem.

34. Answer: C. Questioning the user can often lead to what caused the issue. Of course, you do not want to accuse the user of anything; instead, just ask what the user did last on the computer.

35. Answer: B. The first thing you should do is export the user’s certificate from the first laptop to the second laptop. This can be done by clicking Start and typing certmgr.msc in the Search box; then locate and export the correct Personal Certificate. The Certificates console window can also be added to an MMC. The Encrypting File System (EFS) is the standard single-file encryption method for Windows 8/7/Vista (if the version supports it). Files encrypted with EFS are then displayed as green in color within Windows Explorer. Networking need not be disabled, and we aren’t sure which user is being referred to in the answers, but if the certificate has been exported, that user should be able to read the files. Partitions can be converted from FAT32 to NTFS but not vice versa.

36. Answer: A. The technician should update the antivirus (AV) software immediately after installing it and set it to automatically check for updates every day. If the PC was infected, and the scenario makes no mention of this, the technician should have already removed the system from the network, ran a full scan, and quarantined infected files—in that order. Any other viruses that eluded quarantine would be researched on the AV manufacturer’s website.

37. Answer: D. Check the hash key of the virus definition you downloaded against the location that you downloaded from. Other properties of the definition (or signature) file (such as the file owner, creation date, and file version) can all be spoofed. The difference is that the hash key is mathematically contrived and must match the key from the download point. Always check hashes (such as MD5 hashes) when downloading important data in order to verify the integrity of that data.

38. Answer: C. If the customer is having a hard time describing the problem, leaving you at a loss as to what to fix, ask the person to slowly repeat what the problem is. Try to relax him and be understanding, and especially patient. The more patient you appear, the more chance the customer will paint you a good picture of what the problem is. You should not offer any repair options until you know exactly what the problem is. Computer jargon never helps the situation; if you start using terms the customer is unfamiliar with, then you risk alienating the customer and making things more difficult. Never abruptly leave the customer. Persevere, find out what the problem is, and repair it as soon as possible.

39. Answer: B. A Trojan appears to perform desired functions but is actually performing malicious functions behind the scenes. Trojans are used to access a computer through a backdoor and take control of it. They are the bane of web servers as well. Remote Access Trojans (RATs) are used to take control of Windows clients without the users knowing. A virus is code that runs on a computer without the user's knowledge, infecting files when it is executed. Spyware is malicious software that is unwittingly downloaded and installed. It is usually employed to track the surfing activities of a user. A rootkit is software that is designed to gain administrator-level control over a system.

40. Answer: C. Foreign disks that are installed in a computer show up in the Disk Management utility as foreign. They need to be imported by right-clicking them and running through the import procedure. No need to convert them from basic to dynamic unless you decide later that you want to create special arrays of disks or expand/contract the size of partitions. Set a disk to active if it has an OS and you wish to make it bootable.

41. Answers: A and C. The correct navigational path to the System Restore configuration utility in Windows 7 is Start > right-click

Computer > Properties > click the System protection link. That displays the System Properties dialog box System Protection tab. But you gotta love the other method: Run > type `systempropertiesprotection.exe`. Without touching the mouse, you can bring up the same dialog box: Windows + R > type `systempropertiesprotection.exe`. Fun! Anyway, Start > right-click Computer > Advanced is not a valid path. Start > right-click Computer > Properties > click the Advanced system settings link is valid, but it brings you to the Advanced tab of the System Properties dialog box.

- 42. Answer: D.** The figure is showing the Advanced tab of a Lexmark Pro900 printer in Windows 7. It was accessed by navigating to Control Panel > Devices and Printers > right-click the printer and select Printer Properties > Advanced tab. When you right-click on some printers, you need to select Properties instead of Printer Properties; otherwise, the navigation is the same. The Ports tab displays the physical or logical port being used by the printer and allows you to add, remove, and configure ports and enable printer pooling between two or more printers.
- 43. Answer: B.** Authentication can be carried out by utilizing something a user is, such as a fingerprint; something a user knows, such as a password or PIN; something a user has, such as a smart card or token; and something a user does, such as a signature or speaking words.
- 44. Answer: C.** Whaling is when phishing attacks are directed at CEOs and other powerful entities in an organization. It is a type of spear phishing—a directed phishing attack. Whereas most phishing attacks are performed via e-mail, vishing is carried out over the phone.
- 45. Answer: B.** If anything is going to disturb the server room or other equipment rooms, notify the network administrator immediately. It's coffee—no need to fill out an accident report. After you notify the admin, you might choose to mop up the mess; that's your prerogative, but I would hope the person who made the mess had a hand in cleaning it up. Material Safety Data Sheets (MSDS) are available for anything that has a chemical within it. I've had some terrible coffee in my day, but nothing that required an MSDS.
- 46. Answer: D.** The DoD 5220.22-M standard specifies that a hard drive be properly purged with bit-level erasure software that does 7 complete passes. Compare this to the Peter Gutman security method,

which requires 35 passes! A magnetic degausser is not software at all, but a device that uses a magnetic or electromagnetic pulse to remove all data from a magnetic disk. Low-level formatting can be accomplished by some BIOS programs and third-party utilities, but data can still be reconstructed from data residue (data remanence).

47. Answer: B. You should configure the Enforce password history policy and set it to a number higher than zero. This way, when a user is prompted to change her password every 42 days (which is the default minimum password age), that user will not be able to use the same password. Password policies can be accessed in Windows within the Local Security Policy window > Security Settings > Account Policies > Password Policy. Minimum password length is the policy that states how many characters a password must be at minimum. Eight is a decent setting, but to be full-on secure many organizations require 15 minimum. There are several technical reasons for this, but the A+ exam does not go into that kind of depth. Complexity requirements policy, if enabled, forces a user to select a password that meets 3 of the following 5 categories: uppercase characters, lowercase characters, numbers, special characters (such as ! or #), and Unicode characters (not often implemented).

48. Answer: A. The path is Settings > General > Passcode Lock > Turn Passcode On. By default, Simple Passcode is enabled, as shown in the figure within the question. This can be disabled on the same Passcode Lock screen.

49. Answer: C. Chkdsk /I performs a less vigorous check of index entries. It can be used only on NTFS partitions. /V (short for verbose) displays the full path and name of every file on the disk. /F fixes errors on the disk. /R locates bad sectors and recovers readable information.

50. Answer: B. When you add a second drive to a system that already has Windows installed, you will probably have to initialize the drive and format it in the Disk Management utility. Rebooting the computer does not help the system see the drive. You can configure the drive in the BIOS to a certain extent, but that won't help Windows see the drive. When you format the drive, Disk Management asks you to assign a drive letter. No need to set the drive to active because this drive does not have an OS to be booted to.

51. Answer: C. The Action Center in Windows 8/7 displays important

messages about solving issues and security concerns. This is the successor to the Windows Vista Problem Reports and Solutions utility. The Task Manager gives you some basic real-time performance data about the PC and can be used to stop processes. Windows Defender is Microsoft's free anti-malware tool.

- 52. Answer: A.** Your local municipality's electrical and safety code requires that all cables be installed properly. No cables can be left hanging or lying on the floor. Rerun the cables through the walls and ceiling, or use a special conduit to run the cables in a way that is safe. This in a nutshell is known as *cable management*.
- 53. Answer: B.** Use the System Configuration tool (Msconfig.exe) to disable the service. Do this in the Services tab. Of course, you can also disable services in the Services console window (services.msc). If you need to stop *and* disable a service, the Services console window is your best bet. That is because Msconfig can disable them but not stop them (plus a restart is required for most Msconfig actions). And the Task Manager can stop them, but not disable them. As to the incorrect answers: The Task Scheduler is used to set a time when particular applications and processes will run. System Properties is the dialog box where you can change the name of the computer, configure System Restore, and set up Remote Desktop. Local Security Policy is where password and auditing policies can be configured.
- 54. Answer: B.** The Windows 7 DVD has been mounted. We can tell because the Target is GRMCULXFRER_EN_DVD; that is the name of the Windows 7 64-bit DVD. It just happens to be sitting in a DVD-ROM drive named F:. It is pointing to, or redirecting to, the Data folder on the hard drive (as you can see from the title of the window). This way, if a person clicks on the Data folder, which can be easily shared, he will see the contents of the Windows 7 DVD. This makes it possible to implement advanced networking and security techniques in conjunction with the DVD via the Data folder.
- 55. Answer: D.** The most practical way to prevent intrusion to the network is to install a firewall. In fact, if this is a SOHO network, chances are the network is controlled by a multifunction network device that already acts as a switch and a router and probably has built-in firewall technology; it just has to be enabled. Usually these are enabled by default, but perhaps someone inadvertently disabled it, and that's one of the reasons an attacker keeps trying to get into

the network. An intrusion-detection system (IDS) is usually more elaborate and costs more money, but it would help to prevent network intrusion. (Some devices combine IDS and firewall technologies, but usually not SOHO multifunction network devices.) Disabling the SSID helps to discourage the average user from accessing the wireless network, but any hacker worth his or her salt can get right past that; plus, the attacker could be trying to connect directly through the Internet connection. Antivirus software, regardless of where it is installed, does not repel attackers; it locates and quarantines malware. Disconnecting the Internet connection would work—the hacker wouldn't be able to get in, but none of the employees would be able to use the Internet. Not a good compromise.

56. Answer: C. Keep away from the jargon. Customers can be confused by it, intimidated by it, and sometimes even frightened by it. This means to stay away from mentioning computer acronyms, the latest technology names, TCP/IP in general, and anything more technical than “reboot the computer.” Analogies and visual aids can be great when explaining technical concepts to a customer. Think along their lines and paint a picture that they can understand. You should definitely limit what the customer needs to know. For example, there is no reason for the customer to know that 802.3ab is the IEEE standard for 1000BASE-T: Ethernet over twisted-pair transmissions at 1000 Mbps on the LAN. You want to know it, but then again, you are a techie and the customer is not.

57. Answers: A and C. You can navigate to the window in the figure by going to the System window (from the Control Panel), clicking the Advanced system settings link, then accessing the Computer Name tab, and clicking Change. Or, by accessing Run, typing systempropertiescomputername.exe, and finally clicking the Change button.

58. Answer: D. Use iwconfig (or ifconfig) to analyze a wireless network adapter in the Linux terminal. (Note: iwconfig does not work in OS X, but ifconfig does.) Ipconfig is a similar tool in Windows. Regedit is the executable that opens the Registry Editor in Windows. Apt-get is used for installing and uninstalling applications in the command-line in Linux.

59. Answer: D. Use the shutdown command! It works in the Command Prompt and also works programmatically within batch files (.bat) or

beyond. To set a shutdown to occur after a specific time period, use the /t xxx switch. taskkill ends processes from the Command Prompt. down is not a command in Windows, but it has been used by other operating system manufacturers to initiate a shutdown. kill is the older Windows NT predecessor to the taskkill command.

- 60. Answer:** C. /S copies subdirectories but skips any empty ones. /E copies all subdirectories, including empty ones. /B copies files in backup mode. /DCOPY:T also copies timestamps of files and folders.
- 61. Answer:** C. Everyone has urgent calls sometimes. But, are they actually urgent? Determine this, and then get back to work as quickly as possible. Don't text, e-mail, or use the phone while at the job site.
- 62. Answer:** C. You should be most interested in PaaS (platform as a service). This cloud technology provides the programmers with an entire platform, or environment, that they can work on. SaaS is software as a service. IaaS is infrastructure as a service. Community cloud is when multiple customers share a provider's cloud service.
- 63. Answer:** D. You should check whether the smartphone is in airplane mode first. That can be easily done by simply looking at the top of the screen for an airplane icon. If the device is in airplane mode, it most likely is not connected to a WLAN (wireless local area network). You could then check other things such as whether Wi-Fi is enabled, whether the person is connecting to the correct wireless network name, is using the right protocols and password and so on. You could also check if the smartphone is configured to act as a hotspot, because that nullifies its WLAN connection as well, but is less likely than the smartphone being in airplane mode in this particular scenario. It is unlikely that Bluetooth would cause a conflict with Wi-Fi, but it is possible, and you can check this by disabling Bluetooth if it is running. Remember that the terms Wi-Fi and WLAN mean essentially the same thing.
- 64. Answer:** D. The default path of the print\$ administrative share in Windows 7 (and Windows 8 and Vista) is C:\Windows\System32\spool\drivers. This is an important folder because it contains drivers for different types of printers; it's a folder you might want to access as an administrator over the network. So, the share is hidden as an administrative share by adding a \$ to the end of the sharename. The columns were dragged to the left to hide

the entire folder path. You can have a folder name with a \$ on the end, but that doesn't make it an administrative share; the share itself has to have the \$ to make it hidden.

65. Answers: A, C, and D. When dealing with prohibited content, there will always be a first responder who is required to identify the issue, report through proper channels, and preserve data and possibly devices used. This person will be in charge of starting the documentation process which includes a chain of custody, the tracking of evidence and maintaining a chronological log of that evidence.

66. Answer: C. KitKat is the name of Android version 4.4 through 4.4.4, though newer versions are now available including Lollipop (ver 5) and Marshmallow (ver 6). Windows 10 Mobile, Apple iOS, and BlackBerry OS don't use such descriptive names.

67. Answer: D. After installing something for a customer, teach the customer how to use it (at least the basics). If you tested it, then there is no reason to recheck connections or turn the printer on and off. Unless you are an independent contractor or consultant, you probably won't bill the customer yourself. Even if that is your responsibility, you shouldn't do so until you have shown the basics of the new printer to the customer. Maintenance kits are not necessary for new printers. They are required when the printer reaches approximately 200,000 pages printed.

68. Answer: A. Not minimizing a customer's problems is one way to deal with a difficult customer. Other ways include avoid arguing, avoid being judgmental, and clarify customer statements. As for the other answers, reporting through proper channels is part of the fundamentals of first response. Tracking evidence and documenting is part of the concept of chain of custody. Finally, you should ask the customer to remove confidential documents; this is one method of dealing with customers' confidential materials appropriately.

69. Answer: D. A zombie is an individual compromised computer connected to the Internet. The owner is unaware that the computer has been installed with malware. The zombie can be updated and controlled remotely from a master computer at a control center. This master computer controls the entire botnet or group of compromised computers. A virus is code that runs on a computer without the user's knowledge, infecting files. A worm is similar to a virus has the capability to self-replicate to other systems. Spam is unwanted,

or unsolicited, e-mail.

70. Answer: B. WEP is a deprecated standard. It has a weak encryption. Instead it is recommended that WPA or WPA2 be used to protect wireless networks. The SSID broadcast functions regardless of the type of encryption protocol used on the wireless network; however, disabling the SSID broadcast is important after all clients have been connected to the wireless access point. Data emanation (also known as signal emanation) is an electromagnetic field generated by devices and cables. If nothing else is available, you should use WEP. This at least offers some level of protection against war driving attacks; it is better than using no encryption whatsoever.

71. Answer: D. You want to set a new default printer in the OS because he has installed a new printer. This is usually done simply by right-clicking the printer and selecting Set as default printer. You might also see a question with the option to click File (or Printer). This is if you double-clicked the printer to open it and then selected the first menu. Unused printer drivers for older printers should be removed when the older printers are replaced.

72. Answer: D. The Session Layer, layer 5 of the OSI model, is where SSL provides encryption. Though it is considered to be an Application Layer protocol, the actual encryption happens at layer 5. The Transport Layer deals with ports used by sessions; for example, an SSL session uses port 443. The Network Layer transmits the actual packets of information from one IP address to another. SSL relies on a PKI to obtain and validate certificates; for example, when you go to a secure e-commerce website. That was what we call a doozie, and goes a bit beyond the A+ exam. For more information about the OSI model, check out my video at this link:

<http://www.davidlprowse.com/video-osi-model-primer2.php>.

73. Answer: B. “conduct external or internal research” exists within Step 2, which is “Establish a theory of probable cause.” Memorize your troubleshooting steps!

1. Identify the problem.
 - Question the user and identify user changes to computer and perform backups before making changes.
2. Establish a theory of probable cause (question the obvious).
 - If necessary, conduct external or internal research based on

symptoms.

3. Test the theory to determine cause.

- Once theory is confirmed determine next steps to resolve problem.
- If theory is not confirmed re-establish new theory or escalate.

4. Establish a plan of action to resolve the problem and implement the solution.

5. Verify full system functionality and if applicable implement preventive measures.

6. Document findings, actions and outcomes.

74. Answer: C. Updating anti-malware programs is part of step 4, remediate infected systems. Know your malware removal procedure!

1. Identify malware symptoms.

2. Quarantine infected system.

3. Disable system restore (in Windows).

4. Remediate infected systems.

a. Update anti-malware software.

b. Scan and removal techniques (safe mode, pre-installation environment).

5. Schedule scans and run updates.

6. Enable system restore and create restore point (in Windows).

7. Educate end user.

75. Answer: B. Phishing is the attempt to fraudulently obtain private information. Usually the phisher masquerades as someone else. A hoax is an attempt at deceiving people into believing something that is false. Dumpster diving is when a person literally scavenges for private information in the garbage. Shoulder surfing is when a person uses direct observation to find out a target password and other personally identifiable information.

76. Answer: A. The most likely cause is a faulty GPS program or other application that is using far too many resources. It is possible that a damaged battery or a virus could also cause the smartphone to overheat, but not as common. Damage to the CPU would probably render the device inoperable. Proper ventilation would be acceptable, but *improper* ventilation (for example a poorly made smartphone case) would be unwanted, and could possibly lead to overheating.

77. Answer: B. The Recovery Console is a system recovery tool used in Windows XP. There are a lot of different commands that can be issued in this mode. If the NTLDR file has been damaged or is missing, it can be rewritten to the hard disk by issuing the fixboot command while in the Recovery Console. NTLDR can also be manually copied from the CD-ROM disc if necessary. The fixmbr command rewrites the master boot record of the hard drive. The chkdsk command checks the integrity of the disk. Bootcfg /rebuild can be used to scan for the operating system installations and rebuild that information into the boot.ini file. Note: While Windows XP is deprecated and not supported by Microsoft, you never know what you find in the field. In addition, the term “Missing NTLDR” is in the CompTIA A+ objectives (as of the writing of this document). Best to be safe!

78. Answers: C and D. The HVAC system’s primary responsibilities are to provide an appropriate ambient temperature for the equipment and to maintain appropriate humidity levels. This keeps the equipment from overheating and prevents electrostatic discharge (ESD). Some HVAC equipment needs to be shielded to reduce electromagnetic interference (EMI) after it is installed. Isolation can be provided by other methods such as the material used in the perimeter of the room, such as physical firewalls. A separate ventilation system can be installed to vent fumes away from the server room; however, there shouldn’t be any fumes. Products that contain fumes should be stored in a separate and specially secured area. And if a fire were to occur, the sprinkler system or special hazards system should end that threat, eliminating any fumes that were a result of the fire.

79. Answer: C. Cell phones cannot obtain a signal within a Faraday cage because of the cage’s shielding. In addition, if a cell phone is used outside the Faraday cage, the signal emanation cannot pass through the cage to the inside. The Faraday cage is meant to block signal or data emanations through the air. USB flash drives, uninterruptible power supplies, and wired keyboards do not use the air to transmit their data.

80. Answer: B. The Regsvr32 command in the Command Prompt is used to manipulate ActiveX controls and DLLs. For example, to register a sample ActiveX control, you would type regsvr32 sample.ocx. Unregistering requires the /u parameter. This leans

more toward the programming side of things, but you should know what the command does. Regedit.exe and Regedt32 bring up the Registry Editor application in Windows. ODBC is short for Open DataBase Connectivity; it is an interface used within the C programming language to access database management systems. ODBC32 is not a command in Windows.

Chapter Twelve. Review of the 220-902 Exam

Great work! You have completed all four 220-902 practice exams. That is a feat in itself. But the real test is yet to come. We'll discuss that in the next chapter.

Now that you have completed the four practice exams, let's do a little review of the 220-902 domains, talk about your next steps, and give you some test-taking tips.

Review of the Domains

Remember that the 220-902 is divided into the five domains, shown in [Table 12.1](#).

Domain	Percentage of Exam
1.0 Windows Operating Systems	29
2.0 Other Operating Systems & Technologies	12
3.0 Security	22
4.0 Software Troubleshooting	24
5.0 Operational Procedures	13
Total	100

TABLE 12.1 220-902 Domains

As you could see while taking the practice exams, Windows operating system and troubleshooting questions are the bulk of what you will see on the real exam. Troubleshooting questions are generally more difficult than the questions from the other domains. You have to place yourself within the scenario and imagine that you are actually fixing software problems step-by-step. The way to succeed at troubleshooting is to 1) know the system and 2) use a logical troubleshooting process.

Even if you are a solid troubleshooter and really know your Windows operating systems, that still leaves two-fifths of the test unaccounted for. So, Other Operating Systems and Technologies, Security and Operational Procedures become the pivotal domains: without them you could be in trouble; with them, you will have all the tools you need to rule the exam.

Everyone who takes the exam gets a different group of questions. Because

it is randomized, one person may see more questions on, say, Window 8.1 than the next person. Or you might see more questions on Windows security. It differs from person to person. To reduce your risk, be ready for any question from any domain, and study all of the objectives.

Review What You Know

At this point you should be pretty well versed when it comes to the 220-902 exam. But I still recommend going back through all of the questions and making sure there are no questions, answers, concepts, or explanations you are unclear about. If there are, then additional study is probably necessary. If something really just doesn't make sense, is ambiguous or vague, or doesn't appear to be technically correct, feel free to contact me at my website (www.davidlprowse.com), and I will do my best to clarify. Think it through carefully before you do so, though. Many of questions are written in an ambiguous manner to replicate what you will see on the real exam.

Here are a few great ways to study further:

- ▶ **Take the exams in flash card mode**—Use a piece of paper to cover up the potential answers as you take the exams. This helps to make you think a bit harder and aids in committing everything to memory. There are also free flash card applications that you can download to your computer to help you organize your studies.
- ▶ **Download the A+ 220-902 objectives**—You can get these from <http://certification.comptia.org/> or from my website (www.davidlprowse.com). Go through them one-by-one and checkmark each item that you are confident in. If there are any items in the objectives that you are unsure about, study them hard. That's where the test will trip you up. It's a big document, so this will take a while. But it really helps to close any gaps in your knowledge and gives that extra boost for the exam.
- ▶ **Take the CompTIA A+ sample practice exam**—This can also be found at CompTIA's website. Re-take that exam until you get 100 percent correct. If any questions give you difficulty, contact me at my website so that I can help you understand them.

More Test-Taking Tips

I've mentioned it several times already, but it bears repeating. Take your time on the exam. The thing is, you either know it or you don't. If you

know it, you will probably end up with time left over. So there is no rush. Rushing can cause you to miss some key word, phrase, or other tidbit of information that could cost you the correct answer. So take it slow, and read everything you see carefully.

While taking an exam, follow these recommendations:

- ▶ Use the process of elimination.
- ▶ Be logical in the face of adversity.
- ▶ Use your gut instinct.
- ▶ Don't let one question beat you!
- ▶ If all else fails, guess.

I'll expand on these points in the final chapter.

If you finish early, use the time allotted to you to review all of your answers. Chances are you will have time left over at the end, so use it wisely! Make sure that everything you have marked has a proper answer that makes sense to you. But try not to overthink! Give it your best shot and be confident in your answers.

Taking the Real Exam

Do not register until you are fully prepared. When you are ready, schedule the exam to commence within a day or two so that you won't forget what you learned!

Registration can be done online. Register at Pearson Vue:

www.pearsonvue.com. They accept payment by major credit card for the exam fee. First-timers will need to create an account with Pearson Vue.

Here are some good general practices for taking the real exams:

- ▶ Pick a good time for the exam
- ▶ Don't over-study the day before the exam
- ▶ Get a good night's rest
- ▶ Eat a decent breakfast
- ▶ Show up early
- ▶ Bring ear plugs
- ▶ Brainstorm before starting the exam
- ▶ Take small breaks while taking the exam
- ▶ Be confident

I'll embellish on these concepts in the final chapter.

Well, that's about it for the 220-902 portion of this book. Meet me at the final chapter: the wrap-up.

Chapter Thirteen. Wrap-Up

This chapter provides the following tools and information to help you be successful when preparing for and taking the CompTIA A+ 220-901 and 220-902 exams:

- ▶ Getting Ready and the Exam Preparation Checklist
- ▶ Tips for Taking the Real Exam
- ▶ Beyond the CompTIA A+ Certification

Exam Alert: Warning! Don't skip this chapter!

I impart some of the most vital things you need to know about taking the real exams here.

Note

This chapter is very similar to Chapter 20 of the *A+ Exam Cram*, 220-901/220-902 (the Exam Cram study guide). If you also purchased that book, you can use either chapter for your test preparations.

Getting Ready and the Exam Preparation Checklist

The CompTIA A+ certification exams can be taken by anyone; there are no prerequisites, but CompTIA recommends one year of prior lab or field experience working with computers. For more information on CompTIA and the A+ certification, visit <http://certification.comptia.org/>.

Also visit the A+ section of my website at www.davidlprowse.com for information, additions, and updated errata.

To acquire your A+ certification, you need to pass two exams: 220-901 and 220-902. These exams are administered by Pearson Vue (www.pearsonvue.com). You need to register with Pearson Vue to take the exams.

Exam Alert

I strongly suggest that you *do not* take both exams on the same day. Instead, take them a week or so apart (at least). Trust me on this.

Each exam consists of two types of questions:

- ▶ **Multiple-choice:** These pose a question to you and ask you to select the correct answer (or answers) from a group of four or more choices. They are quite similar to the questions you've seen throughout this book.
- ▶ **Performance-based:** These ask you to answer a question, complete a configuration, or solve a problem in a hands-on fashion. The questions might ask you to drag and drop information to the correct location or complete a simulation in a virtual system. (See the "Real-World Scenarios" document and supporting simulations and videos on the companion website.)

To master both types of questions, you will need to have a deep understanding of the theory, but you will also need to know the hands-on. So practice on your actual computers as much as possible. This is, of course, imperative for the exams, but it is even more important for the real world. The more you install, configure, and troubleshoot real systems, the more you will be prepared for the job interview, as well as whatever comes your way once you have acquired a position within an organization.

Exam Alert

You've been warned! Practice as much as possible on the following:

- ▶ Real desktop/laptop computer hardware and software
- ▶ A SOHO router
- ▶ Smartphones and tablets
- ▶ Printers, displays, and other peripherals

Note

An important note regarding exam questions.

This book does not offer the exact questions that are on the exam. There are two reasons for this:

1. CompTIA reserves the right to change the questions at any time. Any changes, however, will still reflect the content within the current A+ objectives.
2. The contents of the CompTIA A+ exams are protected by a

non-disclosure agreement (NDA); anyone who sits an exam has to agree to this before beginning a test. The NDA states that the questions within the exams are not to be discussed with anyone.

So I cannot tell you exactly what is on the exams, but I do cover all of the objectives within this book in order to give you the best chance of passing the exams.

You must be fully prepared for the exam, so I created a checklist (see [Table 13.1](#)) that you can use to make sure you have covered all the bases. Go through the checklist twice, once for each exam. For each exam, place a check in the status column as each item is completed. Do this first with the 220-901 exam and then again with the 220-902 exam. I highly recommend completing each step in order and taking the 220-901 exam first. Historically, my readers and students have benefited greatly from this type of checklist.

Step	Item	Details	220-901 Status	220-902 Status
1.	Attend an A+ course.	(Optional): A hands-on A+ course can do so much for you when it comes to installing, configuring, and especially troubleshooting. Especially if you don't have the CompTIA recommended experience (12 months), consider an A+ class.		
2.	Review your study guide.	Whatever main study guide (or guides) you used, be sure to review those carefully.		
3.	Complete the Practice Exams in this book.	<p>Take the four 220-901 exams, and review them carefully. On the second run-through of this checklist, take the four 220-902 exams and review them.</p> <p>If you score under 90% on any one exam, go back and study more!</p> <p>If you have any trouble at this stage, consider getting my A+ Exam Cram 7th edition study guide, or another study guide of your choice, and read it very carefully.</p>		
4.	Create your own cheat sheet.	See Table 13.2 for an example. The act of writing down important details helps to commit them to memory. Keep in mind that you will not be allowed to take this into the actual testing room.		

5.	Register for the exam.	<p>Do not register until you have completed the previous steps; you shouldn't register until you are fully prepared. When you are ready, schedule the exam to commence within a couple days so that you won't forget what you learned!</p> <p>Registration can be done online. Register at Pearson Vue: www.pearsonvue.com.</p> <p>They accept payment by major credit card for the exam fee.</p> <p>(You will need to create an account in order to sign up for exams.)</p>
6.	Review practice questions.	Keep reviewing practice questions until the day of the exam. Review your cheat sheet also if you create one.
7.	Take the exam!	Checkmark each exam to the right as you pass it. Good luck!

TABLE 13.1 Exam Preparation Checklist

Exam Alert

Do not register for the exam until you are thoroughly prepared. Meticulously complete items 1 through 4 in Table 13.1 before you register.

Table 13.2 provides a partial example of a cheat sheet that you can create to aid in your studies. Fill in the appropriate information in the right column. For example, the first step of the six-step troubleshooting process is “Identify the problem.”

Concept	Fill in the Appropriate Information Here
The six-step A+ troubleshooting theory	1. 2. 3. 4. 5. 6.
The motherboard form factors you should know	
The types of DDR and their typical data transfer rates	
The laser imaging process	
The malware removal process	
Windows startup files	
Commands and descriptions (For example: ping – tests to see if other systems on the network are live.)	
* Etc.	
* Continue Table 13.2 in this fashion on paper. The key is to write down various technologies, processes, step-by-step, and so on to commit them to memory.	

TABLE 13.2 Example Cheat Sheet

Tips for Taking the Real Exam

Some of you will be new to exams. This section is for you. For other readers who have taken exams before, feel free to skip this section or use it as a review.

The exam is conducted on a computer and is multiple choice and performance-based. You have the option to skip questions. If you do so, be sure to “flag” them for review before moving on. Feel free to flag any other questions that you have answered but are not completely sure about. This is especially recommended for the performance-based questions. In fact, you might choose to leave all of the performance-based questions until the end. That, of course, is up to you.

When you get to the end of the exam, there will be an item review section, which shows you any questions that you did not answer and any that you flagged for review. Be sure to answer any questions that were not completed.

The following list includes tips and tricks that I have developed over the years. I've taken at least 20 certification exams in the past decade and the following points have served me well.

General Practices for Taking Exams

- ▶ **Pick a good time for the exam:** It would appear that the fewest people are at test centers on Monday and Friday mornings. Consider scheduling during these times. Otherwise, schedule a time that works well for you, when you don't have to worry about anything else. Keep in mind that Saturdays can be busy. Oh, and don't schedule the exam until you are ready. I understand that sometimes deadlines have to be set, but in general, don't register for the exam until you feel confident you can pass. Things come up in life that can sometimes get in the way of your study time. Keep in mind that most exams can be canceled as long as you give 48 hours' notice. (To be sure, check that time frame when registering.)
- ▶ **Don't over-study the day before the exam:** Some people like to study hard the day before; some don't. My recommendations are to study from your cheat sheet, and maybe run through some quick Q&A, but in general, don't overdo it. It's not a good idea to go into overload mode the day before the exam.
- ▶ **Get a good night's rest:** A good night's sleep (seven to nine hours) before the day of the exam is probably the best way to get your mind ready for an exam.
- ▶ **Eat a decent breakfast:** Eating is good! Breakfast is number two when it comes to getting your mind ready for an exam, especially if it is a morning exam. Just watch out for the coffee and tea. Too much caffeine for a person who is not used to it can be detrimental to the thinking process.
- ▶ **Show up early:** The testing agency recommends that you show up 30 minutes prior to your scheduled exam time. This is important; give yourself plenty of time and make sure you know where you are going. Know exactly how long it takes to get to a testing center and account for potential traffic and construction. You don't want to have to worry about getting lost or being late. Stress and fear are the mind killers. Work on reducing any types of stress the day of and the day before the exam. By the way, you do need extra time because when you get to the testing center, you need to show ID, sign forms, get your personal belongings situated, and be escorted to your seat.

Have two forms of ID (signed) ready for the administrator of the test center. Turn your cell phone or smartphone off when you get to the test center; they'll check that, too.

- ▶ **Bring ear plugs:** You never know when you will get a loud testing center or, worse yet, a loud test taker next to you. Ear plugs help to block out any unwanted noise that might show up. Just be ready to show your ear plugs to the test administrator.
- ▶ **Brainstorm before starting the exam:** Write down as much as you can remember from the Cram and cheat sheets before starting the exam. The testing center is obligated to give you something to write on; make use of it! By getting all the memorization out of your head and on “paper” first, it clears the brain somewhat so that it can tackle the questions. I put paper in quotation marks because it might not be paper; it could be a mini dry-erase board or something similar.
- ▶ **Take small breaks while taking the exam:** Exams can be brutal. You have to answer a lot of questions (typically anywhere from 65 to 90) while staring at a screen for an hour or more. Sometimes these screens are old and have seen better days; these older flickering monitors can cause a strain on your eyes. I recommend small breaks and breathing techniques. For example, after going through every 25 questions or so, close your eyes and slowly take a few deep breaths, holding each one for five seconds and then releasing each one slowly. Think about nothing while doing so. Remove the test from your mind during these breaks. It takes only about half a minute but can help to get your brain refocused. It's almost a Zen type of thing; but for me, when I have applied this technique properly, I have gotten a few perfect scores. It's amazing how the mindset can make or break you.
- ▶ **Be confident:** You have studied hard, gone through the practice exams, created your cheat sheet—you've done everything you can to prep. These things alone should build confidence. But actually, you just have to be confident for no reason whatsoever. Think of it this way: You are great... I am great... (to quote Dr. Daystrom). But truly, there is no disputing this! That's the mentality you must have. You are not being pretentious about this if you think it to yourself. Acting that way to others... well, that's another matter. So build that inner confidence and your mindset should be complete.

Smart Methods for Difficult Questions

- ▶ **Use the process of elimination:** If you are not sure about an answer, first eliminate any answers that are definitely incorrect. You might be surprised how often this works. This is one of the reasons why it is recommended that you not only know the correct answers to the practice exam questions, you also know why the wrong answers are wrong. The testing center should give you something to write on; use it by writing down the letters of the answers that are incorrect to keep track. Even if you aren't sure about the correct answer, if you can logically eliminate anything that is incorrect, the answer will become apparent. To sum it up, the character Sherlock Holmes said it best: "When you have eliminated the impossible, whatever remains, however improbable, must be the truth." There's more to it, of course, but from a scientific standpoint, this method can be invaluable.
- ▶ **Be logical in the face of adversity:** The most difficult questions are when two answers appear to be correct, even though the test question requires you to select only one answer. Real exams do not rely on "trick" questions. Sometimes you need to slow down, think logically, and compare the two possible correct answers. Also, you must imagine the scenario that the question is a part of. Think through step-by-step what is happening in the scenario. Write out as much as you can. The more you can visualize the scenario, the better you can figure out which of the two answers is the best one.
- ▶ **Use your gut instinct:** Sometimes a person taking a test just doesn't know the answer; it happens to everyone. If you have read through the question and all the answers and used the process of elimination, sometimes this is all you have left. In some scenarios, you might read a question and instinctively know the answer, even if you can't explain why. Tap into this ability. Some test takers write down their gut instinct answers before delving into the question and then compare their thoughtful answers with their gut instinct answers.
- ▶ **Don't let one question beat you!** Don't let yourself get stuck on one question, especially the performance-based questions. Skip it and return to it later. When you spend too much time on one question, the brain gets sluggish. The thing is with these exams is that you either know it or you don't. And don't worry too much about it; chances are you are not going to get a perfect score. Remember that the goal is only to pass the exams; how many answers you get right after that is irrelevant. If you have gone through this book

thoroughly, you should be well prepared. You should have plenty of time to go through all the exam questions with time to spare to return to the ones you skipped and marked.

- **If all else fails, guess:** Remember that the exams might not be perfect. A question might seem confusing or appear not to make sense. Leave questions like this until the end. When you have gone through all the other techniques mentioned, make an educated, logical guess. Try to imagine what the test is after and why it would be bringing up this topic, as vague or as strange as it might appear.

Wrapping up the Exam

- **Review all your answers:** If you finish early, use the time allotted to you to review the answers. Chances are you will have time left over at the end, so use it wisely! Make sure that everything you have marked has a proper answer that makes sense to you. But try not to over think! Give it your best shot and be confident in your answers. You don't want to second guess yourself!

Beyond the CompTIA A+ Certification

CompTIA started a policy on January 1, 2011. A person who passes the A+ exams will be certified for 3 years. To maintain the certification beyond that time, you must either pass the new version of the exams (before the three years is up), pass a higher level CompTIA exam (such as the Network+ or Security+), or enroll in the CompTIA Continuing Education Program. This program has an annual fee and requires that you obtain Continuing Education Units (CEUs) that count toward the re-certification. There are a variety of ways to accumulate CEUs. See CompTIA's website for more information.

After you pass the exams, consider thinking about your technical future. Not only is it important to keep up with new technology and keep your technical skills sharp, but technical growth is important as well; consider expanding your technical horizons by learning different technologies.

Usually, companies wait at least six months before implementing new operating systems and other applications on any large scale, but you will have to deal with it sooner or later—most likely sooner. Windows, OS X, Linux, Android, and iOS are always coming out with new versions.

Consider keeping up with the newest versions and obtaining access to the latest software and operating systems. Practice installing, configuring,

testing, securing, maintaining, and troubleshooting them.

To keep on top of the various computer technologies, think about subscribing to technology websites, RSS feeds, and periodicals, and read them on a regular basis. Check out streaming video tech channels on the Internet. Join computer Internet forums and attend technology conventions. After all, a technician's skills need to be constantly honed and kept up to date. Feel free to contact me for specific and current recommendations.

Information Technology (IT) technicians need to keep learning to foster good growth in the field. Consider taking other certification exams after you complete the A+. The CompTIA A+ certification acts as a springboard to other certifications. For example, the CompTIA Network+ certification is designed to identify a technician's knowledge of network operating systems, equipment, and networking technologies. The CompTIA Security+ certification takes this to another level, evaluating the technician's knowledge of how to secure networks, computers, and their applications. Now that you know exactly how to go about passing a certification exam, consider more certifications to bolster your resume.

The best advice I can give is for you to do what you love. From an IT perspective, I usually break it down by technology, as opposed to by the vendor or certification. For example, you might want to learn more about e-mail systems, or securing internetworks, or you might prefer to work on databases, build websites, develop apps—who knows! You are limited only by your desire. Whatever the field of technology, learn as much as you can about that field and all its vendors to stay ahead.

Final Note: I wish you the best of luck on your exams and in your IT career endeavors. Please let me know when you pass your exams. I would love to hear from you! Also, remember that I am available to answer any of your questions about this book via my website:

<http://www.davidlprowse.com>.

Sincerely,

David L. Prowse

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Code Snippets

```
bcdedit /set {DEFAULT} bootmenupolicy legacy
```