

# CORE HARDWARE SERVICE TECHNICIAN

This exam simulates the CompTIA A+ Core Hardware Service Technician exam. It is representative of what you should expect on the actual exam. The answers and the explanations for the answers follow the questions. It is strongly suggested that when you take this exam, you treat it just as you would the actual exam. Time yourself, read carefully, and answer all the questions as best you can. There are 80 questions, just as there are on the actual fixed-length exam. Set a 90-minute time limit for yourself. This is the amount of time you are given to take the real thing. The questions reflect the amount of coverage given to each domain in the exam:

Domain	Percentage of Exam	Number of Questions
1.0 Installation, Configuration, and Upgrading	35%	28
2.0 Diagnosing and Troubleshooting	21%	17
3.0 Preventive Maintenance, Safety and Environmental Issues	5%	4
4.0 Motherboard/Processors/Memory	11%	9
5.0 Printers	9%	7
6.0 Basic Networking	19%	15

You should take the exam and score it. If you score less than 75%, you should try rereading the chapters on the domains with which you had trouble.



## Practice Exam

## EXAM QUESTIONS

- The POST program can be found in \_\_\_\_\_.
  - the BIOS chips
  - the DOS disk
  - the Windows program
  - the CMOS RAM chip
- An AT-compatible system has \_\_\_\_\_ DMA channels.
  - 2
  - 4
  - 8
  - 16
- AGP stands for \_\_\_\_\_.
  - Another Graphics Port
  - Apple Graphics Port
  - Advanced Graphics Port
  - Accelerated Graphics Port
- The purpose of the rechargeable battery on a system board is \_\_\_\_\_.
  - to back up the contents of RAM, in case of a power failure
  - to keep the microprocessor's registers alive, in case of a power failure
  - to maintain the contents of CMOS RAM, in case of a power failure
  - to maintain the system's time-of-day chip, in the event of a power failure
- IRQ4 is normally assigned to \_\_\_\_\_.
  - COM1
  - COM2
  - LPT1
  - LPT2
- In a traditional PC setting, IRQ7 is generally assigned to \_\_\_\_\_.
  - COM1
  - COM2
  - LPT1
  - LPT2
- A USB device can be located a maximum distance of \_\_\_\_\_ from the host.
  - 10 feet (3m)
  - 16 feet (5m)
  - 22 feet (7m)
  - 30 feet (10m)
- The recommended maximum length of an RS-232 serial connection is \_\_\_\_\_.
  - 10 feet (3m)
  - 25 feet (8.5m)
  - 50 feet (15m)
  - 100 feet (33m)
- The recommended maximum length of a Centronics parallel connection is \_\_\_\_\_.
  - 10 feet (3m)
  - 25 feet (8.5m)
  - 50 feet (15m)
  - 100 feet (33m)
- What type of connector is used with IBM-compatible versions of the parallel printer port?
  - 36-pin D-shell connector
  - 9-pin D-shell connector

- C. 25-pin D-shell connector  
D. 25-pin edge connector
11. Serial ports transmit data \_\_\_\_\_.  
A. 1 bit at a time  
B. 1 byte at a time  
C. when a clock pulse is applied to them  
D. in one direction only
12. Standard parallel ports transmit data \_\_\_\_\_.  
A. 1 bit at a time  
B. 8 bits at a time  
C. when a clock pulse is applied to them  
D. in one direction only
13. A 25-pin female D-shell connector, located on the back of a PC, is used as \_\_\_\_\_.  
A. the COM1 serial port  
B. the COM2 serial port  
C. the LPT1 parallel port  
D. the game port
14. \_\_\_\_\_ transmissions are conducted at irregular intervals, using start and stop bits.  
A. Serial  
B. Parallel  
C. Synchronous  
D. Asynchronous
15. The COM2 and COM4 serial port settings are normally assigned to \_\_\_\_\_.  
A. IRQ1  
B. IRQ2  
C. IRQ3  
D. IRQ4
16. A .28 dot pitch monitor has \_\_\_\_\_.  
A. .28 inches between pixels onscreen  
B. .28mm between pixels onscreen  
C. .28 inches between characters onscreen  
D. .28mm between characters onscreen
17. An IEEE 1394 FireWire port can support a maximum of \_\_\_\_\_ devices.  
A. 8  
B. 23  
C. 58  
D. 63
18. How many pins does a Wide SCSI 2 connector have?  
A. 68  
B. 50  
C. 25  
D. 9
19. How many logical drives can be created using Microsoft operating systems?  
A. 8  
B. 23  
C. 38  
D. 44
20. An IDE hard-drive interface on a system board that does not contain an enhanced BIOS has a maximum disk partition size of \_\_\_\_\_.  
A. 528MB  
B. 1GB  
C. 2GB  
D. 32MB

21. A 15-pin D-shell connector would probably be used as a \_\_\_\_\_.
- A. SCSI port
  - B. printer port
  - C. serial port
  - D. game port
22. What system component can cause problems to appear in all of a system's other components?
- A. the system board
  - B. the expansion slots
  - C. the power supply
  - D. the hard-disk drive
23. When using the ohmmeter function of a DMM to perform tests, you must always \_\_\_\_\_.
- A. connect the meter in series with the device being tested
  - B. connect the meter in parallel with the device being tested
  - C. remove the device being tested from the circuit board
  - D. open the circuit that contains the device being tested
24. Which of the following command-line functions can be used to restore a corrupted boot record to a Windows 9x hard-disk drive?
- A. `RESTORE /C:`
  - B. `MAKEBOOT C:`
  - C. `RECOVER /MB`
  - D. `FDISK /MBR`
25. What is the major difference between AT and ATX power supplies?
- A. An ATX power supply requires 240-volt AC input.
  - B. An ATX power supply is controlled by a software switch on the system board.
  - C. An ATX power supply delivers more power to the system.
  - D. An AT power supply blows air onto the system board rather than out through the back of the unit.
26. If the power supply's fan runs and the hard drive spins up, but the system appears dead, what is the most likely cause of the problem?
- A. The monitor is simply turned off.
  - B. An I/O card is defective and has the system buses disabled.
  - C. The floppy-disk drive is defective.
  - D. The system board is bad.
27. Cyrix III CPUs can be used in which of the following slots or sockets?
- A. Socket A
  - B. Slot 1
  - C. Slot A
  - D. Socket 370
28. What type of cable is used in a 100BASE-TX system?
- A. CAT4 STP
  - B. CAT5 UTP
  - C. CAT6 STP
  - D. CAT3 UTP

29. What item in a system's CMOS settings can prevent you from upgrading the operating system software?
- A. the hard-disk drive Type setting
  - B. the USB Enable setting
  - C. the Virus Warning function
  - D. the Auto-Detect hard-drive setting
30. You have been asked by a customer to install an additional hard drive in an older AT-style computer that has only one IDE controller (single channel). The system already has a hard drive and a CD-ROM drive installed. How can you handle the request?
- A. Add a SCSI controller to the system.
  - B. Install a new IDE cable with an additional connector on it.
  - C. Connect the hard drive to the B: floppy-disk drive connector.
  - D. Install an IDE host adapter card in the system.
31. What action should logically be taken as a first step if a `Disk Boot Failure` error message is received during bootup?
- A. Replace the hard-disk drive.
  - B. Replace the disk-drive controller.
  - C. Boot the system from a boot floppy and type `SYS C:.`
  - D. Replace the floppy-disk drive.
32. What is the transmission range of an IrDA device?
- A. 1m
  - B. 5m
  - C. 10m
  - D. 20m
33. If a functioning system fails to boot up after a new sound card is installed, what is the most likely cause of the problem?
- A. The sound card is bad.
  - B. The system board does not have enough RAM to accommodate the new card.
  - C. An interrupt-level conflict exists between the sound card and some other device in the system.
  - D. The sound card has a DMA conflict with another system device.
34. An ATA interface can provide for how many drive connections?
- A. 7
  - B. 4
  - C. 15
  - D. 2
35. What type of device would you expect to find in an AGP slot?
- A. video display adapter
  - B. modem card
  - C. local area network card
  - D. sound card
36. The best way to transport a PC board is \_\_\_\_\_.
- A. in an antistatic bag
  - B. in a shielded box
  - C. in a Styrofoam container
  - D. inside aluminum foil

37. You should not wear a wrist grounding strap when \_\_\_\_\_.  
A. repairing a CRT  
B. replacing an adapter card  
C. repairing a motherboard  
D. adding or replacing RAM
38. ESD can especially become a problem in conditions that are \_\_\_\_\_.  
A. hot and dry  
B. cool and dry  
C. hot and humid  
D. cool and humid
39. When disposing of a CRT, you should first \_\_\_\_\_.  
A. pack it in its original container  
B. discharge the HV anode  
C. check applicable local ordinances  
D. smash the CRT's glass envelope with a hammer
40. When replacing the fuser assembly in a laser printer, you should be careful because \_\_\_\_\_.  
A. it has sharp edges  
B. it may leak toner  
C. it may be hot  
D. it may be broken
41. When a system comes back on following a power outage, the primary concern is \_\_\_\_\_.  
A. to print the remaining jobs in the queue  
B. to recover any lost data  
C. to reestablish Internet connections  
D. to guard against power surges to the system
42. What can be done to protect a computer system and its data from the effects of a sudden shutdown or significant power sag?  
A. Use a battery backup for the system's CMOS settings.  
B. Use a UPS unit.  
C. Use a surge suppressor on the power supply.  
D. Use a backup generator.
43. Most ATX Pentium system boards use which combination of extension bus types?  
A. VESA, ISA, and PCI  
B. ISA, AGP, and MCA  
C. ISA, PCI, and VESA  
D. ISA, AGP, and PCI
44. Cache memory is used to \_\_\_\_\_.  
A. increase the speed of data accesses  
B. increase the amount of memory that is available to programs  
C. store data in nonvolatile memory  
D. augment the memory that is used for the operating system kernel
45. The Pentium MMX CPU can fit into which of the following sockets?  
A. Socket 8  
B. Socket A  
C. Socket 370  
D. Super Socket 7
46. What types of microprocessors can be used in a Slot A system board?  
A. Athlon  
B. Duron

- C. XEON  
D. Pentium IV
47. In a Pentium II–based system board, the L2 cache is located \_\_\_\_\_.  
A. on an expansion card  
B. in the microprocessor cartridge  
C. on the system board  
D. on the microprocessor
48. An ATX-type system board supports \_\_\_\_\_.  
A. a soft power switch  
B. a total of 16 expansion slots  
C. universal expansion slots  
D. a RAM capacity of 256MB
49. A 72-pin memory module is known as a \_\_\_\_\_.  
A. SIMM  
B. DIMM  
C. DRAM  
D. PRAM
50. Where is WRAM used in a PC system?  
A. System RAM  
B. Video RAM  
C. Cache RAM  
D. Flash RAM
51. What is the most likely condition indicated by light printout of a dot-matrix printer?  
A. printhead misalignment  
B. worn platen  
C. spent ribbon  
D. incorrect printer setup
52. Which of the following items should be checked when a laser printer produces blank pages?  
A. fuser assembly  
B. toner cartridge  
C. transfer corona  
D. conditioning roller
53. Paper weight is specified in terms of \_\_\_\_\_.  
A. pounds  
B. pounds per 8.5-inch×11-inch sheets  
C. pounds per 17-inch×22-inch sheets  
D. pounds per 11-inch×17-inch sheets
54. The flow of operations in a laser printer can be summarized as \_\_\_\_\_.  
A. condition, clean, transfer, fuse, write, develop  
B. condition, transfer, fuse, clean, write, develop  
C. clean, condition, transfer, fuse, develop, write  
D. clean, condition, write, develop, transfer, fuse
55. Paper jams are most likely to occur in which laser printer area?  
A. paper pickup area  
B. transfer area  
C. fusing area  
D. registration area
56. A customer calls, saying he has a CD stuck in a nonfunctioning drive and wants to know how to get it out. What do you tell the customer?  
A. Remove the top of the drive housing from the drive unit.  
B. Push a paper clip into the hole near the activity light.

- C. Use a small knife to pry the drawer open just enough to get the disc out.
- D. Apply 110-volt AC directly to the power-supply connections on the back of the drive to eject the disc.
57. Which function can be performed by a Type III PCMCIA card, but not by Type I or Type II cards?
- A. removable HDD functions
  - B. memory expansion functions
  - C. serial port functions
  - D. parallel port functions
58. Notebook computers do not typically have \_\_\_\_.
- A. RAM
  - B. power connections
  - C. floppy drives
  - D. ISA expansion slots
59. What must be in place for a PCMCIA card to work properly in a portable computer?
- A. The TCP/IP protocol must be active.
  - B. A COM3 port must be added to the system.
  - C. A special jumper must be set on the motherboard.
  - D. A PC card-enabling driver must be loaded.
60. Which system can be classified as a bus topology?
- A. Ethernet
  - B. FDDI
  - C. token ring
  - D. PS/2
61. An RJ-45 connector is most commonly used with \_\_\_\_.
- A. disk-drive units
  - B. fiber-optic cable
  - C. coaxial cable
  - D. Unshielded Twisted Pair cable
62. The maximum length of a 10BASE-2 Ethernet network segment is \_\_\_\_.
- A. 15m
  - B. 185m
  - C. 520m
  - D. 1,050m
63. If all the drives in an IDE system stop working when a new drive is installed, what is the most likely cause?
- A. The new drive has not been partitioned.
  - B. The CMOS settings for the new drive have not been enabled in the BIOS.
  - C. The old drive is not compatible with the new drive type.
  - D. The master and slave settings of the two drives are conflicting.
64. In a peer-to-peer network \_\_\_\_.
- A. each node contains a security database of users
  - B. all nodes can only be clients
  - C. all nodes must act as servers
  - D. all nodes can act as servers or clients under different circumstances

65. Your system will not boot to the hard drive, so you try to start it with a boot disk in the A: drive. However, the system still refuses to boot up. What should you do next?
- A. Change the Boot Sequence setting in the CMOS Setup utility to check the A: drive first.
  - B. Replace the floppy drive and the signal cable, and then restart the system.
  - C. Replace the hard drive and the signal cable, and then reinstall the operating system and applications.
  - D. Replace the boot disk with a working disk.
66. When you start a Windows-based system in safe mode with standard VGA drivers, at what resolution does the monitor operate?
- A. 640×480
  - B. 800×600
  - C. 1024×768
  - D. 800×400
67. Which I/O connections in an ATX system can be confusing?
- A. the COM1 and COM2 serial ports
  - B. the mouse and keyboard ports
  - C. the VGA video and game ports
  - D. the modem and LAN ports
68. What items are found in an SEC cartridge?
- A. toner, primary corona, and drum
  - B. microprocessor and L2 cache
  - C. fan and heat sink module
  - D. a sealed disk-drive unit
69. The accounting department manager complains that each time her backup tape drive runs, the system's sound card fails. What should you do about this problem?
- A. Tell the manager to run backups at night or during off-hours to avoid conflicts with other devices and systems.
  - B. Install a new power supply with a higher wattage rating so that the drive does not spike the sound card when it runs.
  - C. Install an external tape drive that has its own power supply.
  - D. Check for conflicting IRQ and DMA settings.
70. A \_\_\_\_\_ is a computer used to perform services locally; it then forwards requests for services that it cannot fulfill to an appropriate server.
- A. gateway
  - B. router
  - C. firewall
  - D. proxy server
71. Which of the following Internet connectivity technologies is an "always-on" technology? Choose all that apply.
- A. DUP
  - B. DSL
  - C. cable
  - D. satellite
72. A \_\_\_\_\_ is a combination of hardware and software components that provide a protective barrier between networks with different security levels such as a LAN and the Internet.

- A. gateway
  - B. router
  - C. firewall
  - D. proxy server
73. Which of the following network devices can act as a gateway? (Choose all that apply).
- A. a server computer
  - B. a hub
  - C. a repeater
  - D. a router
74. From the following list, identify the types of connections typically found between the DSL modem and the host computer? (Select all that apply.)
- A. Serial cable
  - B. Telephone cable
  - C. USB cable
  - D. CAT5 UTP cable
75. In a cable modem installation, what type of connector is used to connect the modem to the cable television system?
- A. F-type connector
  - B. RJ-45 connector
  - C. RJ-11 connector
  - D. BNC connector
76. The networking protocol associated with using Windows machines in a network with Novell servers is \_\_\_\_\_.
- A. TCP/IP
  - B. NWLink
  - C. Ethernet
  - D. NetBEUI
77. A device that reroutes paper through the printer so that it can be copied on both sides is called \_\_\_\_\_.
- A. a collator
  - B. a sorter
  - C. a duplexer
  - D. a duplicator
78. Which printer technology is capable of producing photographic quality, continuous-tone images?
- A. CYMK ink-jet printers
  - B. color laser printers
  - C. thermal wax transfer printers
  - D. dye-sublimation printers
79. The term \_\_\_\_\_ refers to special form factor memory devices produced for sub-notebook computers.
- A. MODIMM
  - B. SODIMM
  - C. RIMM
  - D. MicroDIMM
80. Which of the following microprocessors includes a three-level (L3) onboard cache.
- A. Itanium
  - B. Athlon
  - C. Pentium 4
  - D. Xeon

## ANSWERS TO EXAM QUESTIONS

- A.** The POST program is one of the three primary components of the ROM BIOS firmware. This program is located in the BIOS chip (or chips) on the system board.
- C.** The AT system uses the equivalent of two 8237 4-channel DMA controllers to complete the 8-channel AT-compatible DMA function. However, 1 of the channels in the primary DMA controller is used to funnel all the secondary channels through. Therefore, only 7 channels are actually available for use by the system.
- D.** The Accelerated Graphics Port (AGP) was created by Intel, based on the PCI slot, but it is designed especially for the throughput demands of three-dimensional graphics adapters.
- C.** The system board uses the rechargeable battery to maintain power to the system's CMOS RAM area. This area has been used to hold the system's configuration information since the early days of the 80286 AT systems. Because this area is actually RAM, even a short loss of power results in the loss of the configuration information.
- A.** In a PC-compatible system, IRQ4 is generally assigned to the COM1 serial port. The COM2 port is assigned IRQ3. For these two ports, it might be easy to remember that there is an even/odd reversal between the IRQ and COM values.
- C.** In a PC-compatible system, IRQ7 is generally assigned to the LPT1 parallel port. The LPT2 port is typically assigned IRQ5.
- B.** The limit of the USB 1.1 connection is 16 feet (5m) without additional equipment.
- C.** The recommended maximum RS-232 cable length, as recognized by CompTIA, is 50 feet (15m). The maximum length for a standard RS-232C connection is 100 feet (33m).
- A.** The stated maximum length of a Centronics parallel printer cable is 10 feet (3m). Some manufacturers call for a maximum of 6 feet (2m) in their documentation. These distances should be taken seriously.
- C.** At the back of the computer, the connector specified for the IBM printer port is a 25-pin female D-shell connector. The original Centronics specification called for a 36-pin D-shell connector, but that was not used in the PC. However, the 36-pin Centronics connector is still used at the printer end of the cable.
- A.** Serial ports pass data back and forth as a string of single bits. The UARTs in serial ports enable the ports to both transmit and receive data. In asynchronous mode, the timing of the data through a port is controlled by start and stop bits placed at the beginning and end of each character.
- B.** A parallel port passes a complete byte (8 bits) of data through the port at one time. The transmission of the data is synchronized by a control signal handshaking sequence that goes on between the port and the peripheral device. Currently, two types of bidirectional parallel printer ports are on the market.
- C.** A 25-pin female D-shell connector is almost always the LPT1 parallel port connector. In cases in which there are two such connectors, one should be LPT1 and the other should be LPT2. The game port uses a 15-pin female D-shell connector; serial ports use 9-pin and 25-pin male D-shells.

14. **D.** Asynchronous (that is, without timing) transmissions are conducted at irregular intervals. They use start and stop bits to define the data character sandwiched between them.
15. **C.** COM2 and COM4 (both even numbers) are assigned to IRQ3 (an odd number) in the PC-compatible environment.
16. **B.** The .28 dot pitch monitor has .28mm between the centers of each pixel on the face of a color monitor.
17. **D.** With an IEEE 1394 bus, you can connect up to 63 devices together. When IEEE 1394.1 bus bridges become available, you will be able to connect more than 60,000 devices by using an IEEE 1394 bus.
18. **A.** Advanced SCSI connectors, such as those used with Wide SCSI 2, have 68 contacts/pins.
19. **B.** The drive can be partitioned into a primary partition and an extended partition. The extended partition can be subdivided into 23 logical drives (labeled D through Z).
20. **A.** Without large drive support from the BIOS, the IDE drive specification can handle only drives up to 528MB (which is very small by current standards).
21. **D.** There are two possibilities for the purpose of a 15-pin female D-shell connector on the back of the computer. The first is a 3-row version used with the VGA video standard; the second is a 2-row version used for game ports, to which joysticks and other game devices can be connected.
22. **C.** The power supply must deliver power to every portion of the basic system. Even the adapter cards receive power from the power supply through the system board's expansion slots. Therefore, a problem with the power supply could be manifested in any part of the system.
23. **D.** The ohmmeter function uses an internal battery to control the environment being checked. Therefore, it is very important that power in the circuit being tested be removed. In addition, at least one end of the component being tested must be disconnected from the system. This prevents any of the control current from the battery from being directed away through other circuits to which the device may be connected, which would cause the reading taken to be inaccurate.
24. **D.** From the boot disk containing a copy of the FDISK utility, you can run the FDISK program with the /MBR switch to replace the master boot record on a hard disk. This should be followed by using the SYS C: command to copy the system files over to the drive. Be aware that the IO.SYS, MS.SYS, and COMMAND.COM files are different for Windows 9x and MS-DOS, so you should not use different operating system versions on an existing installation unless absolutely necessary.
25. **B.** The ATX power supply is controlled by an electronic switch from the system board. Other differences between the ATX and AT power supplies include the fact that the monitor's power pass through is gone from the ATX design; ATX power supplies provide +3.3V; ATX uses a new, keyed, system board connector; and the ATX fan blows into the system unit rather than out.
26. **D.** Under the conditions cited, the power supply is clearly receiving power (because the fan is running and the hard drive spins up) and is providing power to the disk-drive unit. Otherwise, the system appears dead. The system board is the logical next choice because the problem does not appear to be confined to a particular part of the system (such as just the disk drive or monitor boot-up actions).
27. **D.** The Cyrix III processor was designed specifically to fit in a Socket 370 system.

28. **B.** 100BASE-TX LAN systems are connected together by CAT5 UTP cable.
29. **C.** The BIOS Anti Virus setting is designed to prevent boot-sector viruses from infecting the system and making the computer unusable. However, this same utility also prevents the upgrading software from writing to the boot sector of the hard drive. Therefore, you need to disable this feature before upgrading.
30. **D.** A standard ATA/IDE interface can have only two devices attached to it (master and slave). To install more devices, you must install an ATA2/EIDE host adapter card in one of the system's PCI slots.
31. **C.** A `Disk Boot Failure` error message indicates that the system could not find the boot record it was looking for on the drive. This record could be missing or corrupted. If it is missing, the drive may not have been formatted. If it is corrupted, the boot record needs to be restored. Booting to a floppy disk enables you to attempt to access the hard drive. If the hard drive cannot be accessed, you should repartition and reformat the drive. If the drive can be seen but not booted, you should install the system files to it from the floppy disk by using the `sys` command.
32. **A.** Typically, the transmission range of an IrDA device is specified as 0m to 2m, but the IrDA standard requires that the device have the ability to communicate from at least 1m.
33. **C.** If the system refuses to boot up after a new option has been installed, it is a good guess that it has detected a conflict between the new device and one of the other system devices and that it wants you to straighten out the conflict before it goes back to work.
34. **D.** A standard ATA connection can support a maximum of one master device and one slave device.
35. **A.** Newer Pentium systems include an advanced AGP interface for video graphics. The AGP interface is a variation of the PCI bus design that has been modified to handle the intense data throughput associated with three-dimensional graphics. Most new video adapter cards are designed for use with AGP slots.
36. **A.** A printed circuit board is typically shipped in an antistatic bag, if it is not already installed in a system. It is also typically shipped with an antistatic foam sheet along the solder side of the board. This scenario has been designed and refined by the PC board manufacturers for shipping products around the world safely. This is also the best method for transporting PC boards.
37. **A.** A wrist strap is a conductor designed to carry electrical charges away from your body. In high-voltage environments such as those found inside a power-supply unit or monitor, however, this safety device becomes a potential path for electrocution.
38. **A.** ESD tends to form when conditions are hot and dry. These conditions provide the low humidity that ESD requires to form.
39. **C.** Although there are not any national requirements for disposing of computer equipment in some countries, there may be local requirements in your area. You need to check the dumpsite regulations before disposing of computer equipment of any kind.
40. **C.** The fuser assembly in a laser printer is a burn hazard. It is one of the three types of hazards present in laser printers: burn, vision damage, and electric shock.
41. **D.** When power is restored after an outage, every piece of equipment that has a power switch in the On position draws maximum power. This places a very high initial load on the power-supply system and results in short-term fluctua-

- tions—power surges and sags. These fluctuations can wreak havoc and cause damage with a digital system.
42. **B.** Surge suppressors can filter out minor variations in incoming power, but they have no active components to actually compensate for large variations such as major sags or total power outages.
  43. **D.** Historically, the vast majority of all Pentium system boards have used a combination of ISA and PCI slots to service the system. With the advent of ATX-compliant system boards, the AGP slot for video graphics adapters became a common addition.
  44. **A.** Cache memory of any type—and there are several applications for caching—is used to speed up a system’s access to data. It is volatile memory, and it always operates in parallel with some other memory type (for instance, RAM or disk memory).
  45. **D.** The Super Socket 7 PPGA socket is a derivation of the Socket 7 specification, with the addition of support for a 100MHz front-side bus specification.
  46. **A.** AMD produced a reversed-version of the Slot 1 specification for its Athlon processor by turning around the contacts of the Slot 1 design. AMD called the new design Slot A. Although the Slot A design serves the same ends as the Slot 1 design, the Slot A and Slot 1 microprocessor cartridges are not compatible with one another.
  47. **B.** In the Pentium Pro and Pentium II microprocessor designs, the L2 cache has been migrated from the system board to the same substrate on which the microprocessor is constructed. This provides extremely fast access of the cache by the processor core.
  48. **A.** One of the features of the ATX specification is the addition of a software On/Off switch that is activated by a single key. This idea is not new; it has been available in the Apple Macintosh design for some time.
  49. **A.** The 72-pin memory module is the larger-sized SIMM. The smaller, original module is a 30-pin version. DIMMs, on the other hand, are physically larger, physically different, and have 168 pins.
  50. **B.** Windows RAM or WRAM is designed specifically for use as video memory. It is a special version of VRAM that has been optimized to transfer blocks of video data at a time. This enables WRAM to operate at speeds of up to 150% the speeds of typical VRAM devices.
  51. **C.** Light print produced by any type of printer typically indicates that the primary printing element is wearing out or running low. In the case of a dot-matrix printer, this is the ink ribbon.
  52. **C.** A blank page indicates that no information is being written on the drum. This condition basically involves the laser-scanning module, control board, and power supply. Another blank-page fault occurs when the corona wire becomes broken, contaminated, or corroded, so that the attracting charge between the drum and paper is severely reduced.
  53. **C.** The fundamental specification for paper is paper weight. Paper is specified in terms of its weight per 500 sheets at 22 inches by 17 inches (for example, 500 sheets of 22-inch×17-inch, 21-pound bond paper weighs 21 pounds).
  54. **D.** In a laser printer, the drum is cleaned to remove any excess toner, conditioned by applying a uniform charge to its surface, and written on with the new information to be printed. The image on the drum is developed by attracting toner to the electronic image, and then it is transferred to the paper. Finally, the toner image is fused to the paper.

55. **A.** Picking up something as thin as a piece of paper without wrinkling it is difficult for humans. It is also a difficult undertaking for a mechanical laser printer. The paper pickup area is the leading place for paper jams to occur in a laser printer.
56. **B.** Pushing a straightened paper clip into the small opening on the front panel of the drive mechanically releases the CD tray from the drive and lets it open. This is the only nondestructive way to remove a disc from a nonfunctioning CD-ROM drive.
57. **A.** The Type III PCMCIA specification was designed specifically to enable PC cards to handle removable disk-drive systems. Of course, this specification remains compatible with the memory usage specification for Type I and the general I/O functions of Type II cards.
58. **D.** There is not enough room in a portable computer case for traditional expansion slots. This is one of the traditional drawbacks of portable computers and the basic reason that PC cards exist.
59. **D.** The PCMCIA specification allows for hot insertion of PC cards in the system. However, the system's PC card-enabling drivers must be loaded and running so that it can interrogate the card and configure it for use when it is added to the system.
60. **A.** Ethernet runs as a bus topology. ARCnet and token-ring networks operate as ring topologies.
61. **D.** The RJ-45 registered jack is the connector specified for use with UTP cable. Coaxial cable uses BNC connectors, and fiber cable uses ST connectors.
62. **B.** The 10BASE-2 specification is a misuse of the naming methodology because such a LAN cannot be 200m long (although 185m is close to 200m). The extra distance may compensate for the equipment links that must be used at the end of the network to connect to the user.
63. **D.** If the original drive was working but stopped when the new drive was installed, a device conflict is indicated. (Recall that installing a new device is one of the times when a configuration conflict is likely to occur.) In the case of IDE devices, the most common device conflicts occur due to master/slave settings. If these settings are wrong, the system cannot differentiate between the devices to communicate with them; therefore, no boot or drive recognition is possible with these devices.
64. **D.** In a peer-to-peer network, all nodes can act as servers or clients under different circumstances. They can access files and folders on other nodes if they are shared and can make their resources available to other members of the network by marking them as shared.
65. **A.** With newer CMOS configuration options, it is common to set up the system boot sequence to skip checking the A: floppy-disk drive. This makes the bootup process a couple seconds faster. However, when a bootup problem occurs, the system has no reason to check the A: drive. Therefore, the technician must go into the CMOS settings to direct the system toward the A: drive during bootup.
66. **A.** Under the VGA video specification, the standard resolution setting is 640×480 pixels.
67. **B.** Because the ATX specification uses 6-pin PS/2 mini-DIN connectors for both the keyboard and mouse connections, you can easily confuse the two when installing the system's peripherals. This is a particularly interesting choice of connectors considering past connectivity choices (such as video and COM port connections) that have been confusing to users and technicians.

68. **B.** The SEC cartridge is the container that Intel designed to hold its Pentium II microprocessor and its L2 cache. The package was designed to plug in to the proprietary Intel Slot 1 design.
69. **D.** If two devices attempt to use the same system resources at the same time, they have conflicts. The resources they are sharing (such as IRQ and DMA channels) attempt to refer to different service routines that were never written for them or to incorrect memory locations. Therefore, at least one of the devices is doomed to fail due to improper service support.
70. **D.** A proxy server is a computer used to perform services locally; it then forwards requests for services that it cannot fulfill to an appropriate server.
71. **B, C, D.** DLS, cable modem, and satellite Internet connectivity methods employ “always-on” connectivity to the ISP. Dial-Up Networking (DUP) is on only when a call is dialed and answered across the telephone system.
72. **C.** By definition, a firewall is a combination of hardware and software components that provide a protective barrier between networks with different security levels such as a LAN and the Internet.
73. **A, D.** Either a router or a computer that has been configured to handle routing can be used as a gateway between two networks, such as the local area network and the Internet.
74. **C, D.** The connection between the DSL modem and the host computer is typically made using either a USB cable or a CAT5 UTP cable that connects to the host computer’s NIC.
75. **A.** An F-type connector is used to connect the cable modem to the CATV system.
76. **B.** NWLink is Microsoft’s version of the Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX) network protocol used in Novell NetWare environments.
77. **C.** A duplexer is the device that reroutes paper through the printer so that it can be copied on both sides.
78. **D.** Dye-sublimation printers are used to produce photographic quality, continuous-tone prints.
79. **D.** MicroDIMMs are special form factor memory modules designed for the compact requirements posed by sub-notebook computer systems.
80. **A.** The Itanium is the latest high-end Intel microprocessor designed specifically for server computers. It offers three levels of onboard caching including a new Level 3 (L3) cache.