

TRUE/FALSE

1. When bytes are used to represent a finite set of data such as the 52 cards in a deck, a table can be used to associate each unit of data with a unique bit pattern.

ANS: T PTS: 1 REF: 59

2. Computer programmers can assign bytes to represent anything by designing a look-up table.

ANS: T PTS: 1 REF: 59

3. The decimal number system, also called base 10, was adopted by humans because of its ease of use for our 10-fingered species.

ANS: T PTS: 1 REF: 59

4. Digitized information is valueless without the ability to process it into useful forms.

ANS: T PTS: 1 REF: 61

5. Any object having at least one distinct state can be used as a digital switch.

ANS: F PTS: 1 REF: 62

6. When electricity is flowing through a transistor it represents a 0; when it is not flowing it represents a 1.

ANS: F PTS: 1 REF: 63

7. Intel, AMD, and other manufacturers are manufacturing dual-core processors and quad-core processors that use two and four CPUs on one chip that work together to provide twice and four times the speed of traditional single-core chips.

ANS: T PTS: 1 REF: 64

8. Data flows back and forth between the CPU and RAM across the rear side bus.

ANS: F PTS: 1 REF: 64

9. Typically the FSB connects to a chipset that ties together several bus systems sending and receiving bytes from memory, input and output devices, storage, networks, and other motherboard components.

ANS: T PTS: 1 REF: 65

10. Faster clock speeds do not mean that a device will generate more heat and require a larger cooling system.

ANS: F PTS: 1 REF: 66

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11. A processor with a 32-bit wordlength has the capacity to be twice as fast as a processor with an 8-bit wordlength.
ANS: F PTS: 1 REF: 67
12. The truest measure of a processor's performance is how well it integrates with the computer's memory.
ANS: F PTS: 1 REF: 67
13. Gordon Moore, cofounder of Intel, observed in 1965 that the continued advances in technological innovation made it possible to reduce the size of transistors, doubling their density on the chip every four years.
ANS: F PTS: 1 REF: 69
14. ROM is sometimes called memory or primary storage.
ANS: F PTS: 1 REF: 71
15. On notebook systems, the graphics hardware is typically in the form of a separate graphics card that you can remove or upgrade.
ANS: F PTS: 1 REF: 73
16. Because both the processor and RAM require electricity to store data, both contain only minimal data when a computer is initially powered up.
ANS: F PTS: 1 REF: 74
17. CMOS is the reason that a PC is able to maintain the correct time and date even when it is powered down.
ANS: T PTS: 1 REF: 75
18. Two types of media use magnetic storage: disks and tapes.
ANS: T PTS: 1 REF: 76
19. Just like the ROM on your motherboard, once data has been recorded on a CD-ROM, it cannot be modified—the disc is read-only.
ANS: T PTS: 1 REF: 79
20. The process of writing to an optical disc is sometimes called ripping.
ANS: F PTS: 1 REF: 80

MODIFIED TRUE/FALSE

1. Besides their use in performing mathematical calculations, base ten numbers are the key ingredient for digitizing sound, music, photographs, drawings, paintings, animation, and movies.
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ANS: F, binary

PTS: 1 REF: 59

2. On the road, digital convergence takes the form of smart phones and other multipurpose handheld devices that merge cell phone, PDA, MP3 player, digital video player, and digital camera functionality into a single portable device. _____

ANS: T PTS: 1 REF: 60

3. Integrated circuits, also called keys, are used to store and process bits and bytes in today's computers. _____

ANS: F, chips

PTS: 1 REF: 63

4. A CPU consists of three primary components: the arithmetic/logic unit, the processor unit, and registers. _____

ANS: F, control

PTS: 1 REF: 64

5. The latest technique in chip design is referred to as multicore technology and refers to housing more than one CPU on a chip. _____

ANS: T PTS: 1 REF: 64

6. RAM capacities in today's new PCs typically range from 1 GB in low-end PCs and netbooks, to 6 GB in powerful desktop PCs. _____

ANS: T PTS: 1 REF: 64

7. The execution of an instruction is a step-by-step process that involves two phases: the idle phase and the execution phase. _____

ANS: F, instruction

PTS: 1 REF: 65

8. Wordlength is the number of words that a CPU can process at once. _____

ANS: F, bits

PTS: 1 REF: 67

9. One form of multiprocessing is called tandem processing, which speeds processing by linking several microprocessors to operate at the same time. _____

ANS: F, parallel

PTS: 1 REF: 68

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10. Secondary storage devices are used to store data more permanently than RAM, such as when the computer is turned off. _____

ANS: T

PTS: 1

REF: 71

11. Mail time refers to the amount of time it takes for a request for data to be fulfilled by the storage device. _____

ANS: F, Access

PTS: 1

REF: 76

12. A technology called a(n) data area network links together many storage devices over a network and treats them as one large disk. _____

ANS: F, storage

PTS: 1

REF: 78

13. Blu-ray makes use of the shorter wavelength of blue light to read and write even smaller pits on the optical disc surface for higher capacity. _____

ANS: T

PTS: 1

REF: 79

14. A solid-state storage device stores data using transistors. _____

ANS: T

PTS: 1

REF: 80

15. Universal Serial Bus is a standard that allows a wide array of devices to connect to a computer through a common port. _____

ANS: T

PTS: 1

REF: 81

MULTIPLE CHOICE

1. From large server computers that support the needs of thousands of users, to the smallest smart phone, computing devices share fundamental components, such as ____.
- a. processing components
 - b. data storage
 - c. input and output capabilities
 - d. all of the above

ANS: D

PTS: 1

REF: 57

ASCII Chart			
A	01000001	P	01010000
B	01000010	Q	01010001
C	01000011	R	01010010
D	01000100	S	01010011
E	01000101	T	01010100
F	01000110	U	01010101
G	01000111	V	01010110
H	01001000	W	01010111
I	01001001	X	01011000
J	01001010	Y	01011001
K	01001011	Z	01011010
L	01001100		
M	01001101		
N	01001110		
O	01001111		

2. The accompanying figure illustrates a ____.
- a. look-up graph
 - b. look-up table
 - c. reference graph
 - d. reference table
- ANS: B PTS: 1 REF: 59
3. Referring to the accompanying figure, the ASCII chart shown above is used to associate data with ____.
- a. bytes
 - b. words
 - c. numbers
 - d. HTML code
- ANS: A PTS: 1 REF: 59
4. A computer is a digital electronics device that supports four activities that do NOT include ____.
- a. Input
 - b. Output
 - c. Processing
 - d. Decision making
- ANS: D PTS: 1 REF: 58
5. Digital devices store and process data as ____.
- a. text
 - b. bits
 - c. graphics
 - d. files
- ANS: B PTS: 1 REF: 59
6. One approach to data representation is a ____ table. For example, with a table of the alphabet, you might look up 01000111 to find that it represents the uppercase letter G.
- a. find now
 - b. look-up
 - c. key
 - d. search
- ANS: B PTS: 1 REF: 59
7. In the early days of computing, the computer industry agreed on a code for representing keyboard text characters and named it ____.
- a. ASCII
 - b. ASCI
 - c. ASKEE
 - d. ASCEE
- ANS: A PTS: 1 REF: 59
8. The quality of a digital electronics device is typically a reflection of the ____ of its processor.

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- a. size
- b. manufacturer
- c. speed
- d. age

ANS: C PTS: 1 REF: 62

9. Computers use digital ____ not only to store bits and bytes but also to process them.
- a. switches
 - b. signals
 - c. functions
 - d. methods

ANS: A PTS: 1 REF: 62

10. Invented in ____ at Bell Labs, transistors have become the key ingredient of all digital circuits, including those used in computers.
- a. 1937
 - b. 1947
 - c. 1967
 - d. 1977

ANS: B PTS: 1 REF: 62-63

11. In the late 1950s, Jack Kilby of Texas Instruments and Robert Noyce of Fairchild Semiconductor developed a method to integrate multiple transistors into a single module called a(n) ____ circuit.
- a. core
 - b. multicore
 - c. synergized
 - d. integrated

ANS: D PTS: 1 REF: 63

12. Today's technology is able to pack all the CPU circuits onto a single module smaller than the size of your smallest fingernail, called a ____.
- a. miniprocessor
 - b. microprocessor
 - c. mini-module
 - d. micro-module

ANS: B PTS: 1 REF: 63

13. A processor is engineered to carry out specific instructions called its instruction ____.
- a. group
 - b. set
 - c. key
 - d. book

ANS: B PTS: 1 REF: 63

14. Nanotubes are tubes made of lattices that are ____ atom(s) deep.
- a. one
 - b. two
 - c. three
 - d. four

ANS: A PTS: 1 REF: 63

15. The arithmetic/____ unit contains the circuitry to carry out instructions, such as mathematical and logical operations.
- a. knowledge
 - b. logic
 - c. program
 - d. text

ANS: B PTS: 1 REF: 64

16. ____ hold the bytes currently being processed.
- a. Registers
 - b. Memory markers
 - c. FSBs
 - d. Control units

ANS: A PTS: 1 REF: 64

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17. Intel has built a prototype 80-core processor, containing ____ million transistors, slated for delivery by 2011.
- a. 10
 - b. 50
 - c. 100
 - d. 150
- ANS: C PTS: 1 REF: 64
18. The ____ side bus consists of electronic pathways between the CPU and RAM capable of transporting several bytes at once.
- a. front
 - b. back
 - c. right
 - d. left
- ANS: A PTS: 1 REF: 64-65
19. Clock speeds in today's digital devices are often measured in ____ which is millions of cycles per second.
- a. kilohertz
 - b. megahertz
 - c. gigahertz
 - d. terahertz
- ANS: B PTS: 1 REF: 66
20. ____ memory is a type of high-speed memory that a processor can access more rapidly than RAM.
- a. Clipboard
 - b. Banked
 - c. Library
 - d. Cache
- ANS: D PTS: 1 REF: 67
21. ____ level(s) of cache are used in today's personal computers.
- a. One
 - b. Two
 - c. Three
 - d. Four
- ANS: C PTS: 1 REF: 67
22. Today's personal computers carry out billions of instructions per second, or operate in the ____ range.
- a. megaflop
 - b. gigaflop
 - c. megaflop
 - d. gigaflop
- ANS: B PTS: 1 REF: 67
23. ____ is processing that occurs using more than one processing unit.
- a. Megaprocessing
 - b. Gigaprocessing
 - c. Multiprocessing
 - d. Synched processing
- ANS: C PTS: 1 REF: 68
24. Typically used in larger workstations, coprocessors are ____ processors that speed processing by executing specific types of instructions while the CPU works on another processing activity.
- a. general-purpose
 - b. special-purpose
 - c. either a. or b.
 - d. neither a. nor b.
- ANS: B PTS: 1 REF: 68
25. Today's PCs typically include a ____ processing unit, a powerful processor that handles advanced graphics rendering for demanding graphics applications such as the 3D environments of games.
- a. photo
 - b. color
 - c. graphics
 - d. rendering

ANS: C PTS: 1 REF: 68

26. A technique called ____ allows processors from different computers to work together over a network on complex problems.
- a. grid computing
 - b. clustering
 - c. either a. or b.
 - d. neither a. nor b.

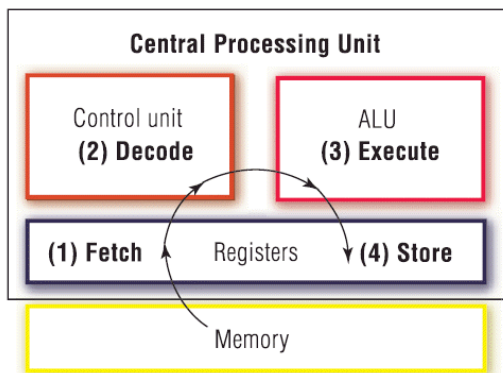
ANS: C PTS: 1 REF: 69

27. ____ parallel processing (MPP), used in supercomputers, involves using hundreds or thousands of processors operating together.
- a. Mega
 - b. Massively
 - c. Maxi
 - d. Monster

ANS: B PTS: 1 REF: 69

28. ____ storage is storage that is used by a computer system for standard operations.
- a. System
 - b. Backup
 - c. Processor
 - d. Central

ANS: A PTS: 1 REF: 72



29. The accompanying figure illustrates the execution of a(n) ____.
- a. instruction
 - b. process
 - c. command
 - d. sequential list

ANS: A PTS: 1 REF: 65

30. Referring to the accompanying figure, steps 1 and 2 are often referred to as the ____ phase.
- a. execution
 - b. instruction
 - c. process
 - d. command

ANS: B PTS: 1 REF: 65

31. Referring to the accompanying figure, steps 3 and 4 are often referred to as the ____ phase.
- a. execution
 - b. instruction
 - c. process
 - d. action

ANS: A PTS: 1 REF: 65

32. There are several forms of system storage, including RAM, cache, video RAM, ROM, and CMOS. Of these, ____ has the largest capacity.
- a. RAM
 - c. ROM

b. cache d. CMOS

ANS: A PTS: 1 REF: 72

33. RAM exists as a set of chips grouped together on a circuit board called a ____.
- a. SIM
 - b. SIMM
 - c. SAM
 - d. SDRAM

ANS: B PTS: 1 REF: 72

34. Graphics memory, sometimes called ____, is used to store image data for a computer display in order to speed the processing and display of video images.
- a. GRAM
 - b. VRAM
 - c. MRAM
 - d. PRAM

ANS: B PTS: 1 REF: 73

35. Graphics memory acts as a(n) ____ between the microprocessor and the display.
- a. buffer
 - b. intermediate storage area
 - c. either a. or b.
 - d. neither a. nor b.

ANS: C PTS: 1 REF: 73

36. Desktop systems often use a graphics ____ board called a graphics card or video card that contains the graphics memory, GPU, and other graphics hardware and is plugged into the motherboard.
- a. transistor
 - b. magnetic
 - c. bus
 - d. circuit

ANS: D PTS: 1 REF: 73

37. CMOS memory (pronounced see-moss, short for ____ metal-oxide semiconductor) provides semipermanent storage for system configuration information that may change.
- a. computer
 - b. complementary
 - c. central
 - d. compact

ANS: B PTS: 1 REF: 75

38. When selecting storage devices and media, you should examine its selling features, including ____.
- a. access time associated with the media
 - b. storage capacity
 - c. portability
 - d. all of the above

ANS: D PTS: 1 REF: 76

39. The storage ____ of a storage medium is the maximum amount of bytes that it can hold.
- a. scalability
 - b. capacity
 - c. access rating
 - d. RAM

ANS: B PTS: 1 REF: 76

40. Magnetic storage devices use the magnetic properties of ____ oxide particles to store bits and bytes more permanently than RAM.
- a. iron
 - b. copper
 - c. lead
 - d. zinc

ANS: A PTS: 1 REF: 76

41. Magnetic disks can be ____ platters (hard disks) or Mylar plastic film (floppy disks).

- a. thick steel
- b. thin steel
- c. thick copper
- d. thin copper

ANS: B PTS: 1 REF: 77

42. Microdrives, tiny hard drives that can store gigabytes of data on a disk one or two ____ in size, have transformed handheld devices.

- a. millimeters
- b. centimeters
- c. inches
- d. kilometers

ANS: C PTS: 1 REF: 77

43. Two 60 GB microdrives enable the current iPod Classic to store up to ____ songs.

- a. 10,000
- b. 20,000
- c. 30,000
- d. 40,000

ANS: C PTS: 1 REF: 77

44. Magnetic tape is an example of a ____ storage medium because data is written and read in sequential order from the beginning of the tape to the end.

- a. sequential access
- b. parallel access
- c. logical
- d. regimented

ANS: A PTS: 1 REF: 77

45. RAID or ____ array of independent disks uses a second system of disks to maintain a backup copy of the data stored on the primary disks.

- a. repeat
- b. redundant
- c. random
- d. read-only

ANS: B PTS: 1 REF: 78

46. A compact disc read-only memory (CD-ROM), commonly referred to as a CD, is an optical medium that stores up to ____ MB of data.

- a. 600
- b. 700
- c. 800
- d. 900

ANS: B PTS: 1 REF: 79

47. A digital video disc read-only memory (DVD-ROM) stores over ____ GB of data in a fashion similar to CDs except that DVDs are able to write and read much smaller pits on the disc surface.

- a. 1.7
- b. 2.7
- c. 3.7
- d. 4.7

ANS: D PTS: 1 REF: 79

48. Manufacturers use ____ to indicate that a medium is recordable; that is, it can be written to only once.

- a. R
- b. RW
- c. ROM
- d. RAM

ANS: A PTS: 1 REF: 80

49. Currently, the most popular format for writable CDs is CD-RW, and drives that support CD-RW are referred to simply as CD ____.

- a. burners
- b. rippers
- c. engines
- d. processors

ANS: A PTS: 1 REF: 80

50. Specifications for a typical DVD burner are either _____. The X stands for “times the original transfer rate” of a disc.
- a. 2X or 4X
 - b. 8X or 16X
 - c. 24X or 32X
 - d. 48X or 64X

ANS: B PTS: 1 REF: 80

51. Flash memory ____.
- a. is a form of solid-state storage
 - b. updates the data it holds in small blocks
 - c. both a. and b.
 - d. neither a. nor b.

ANS: A PTS: 1 REF: 80

52. _____ require(s) no moving parts to read and write data. It is therefore much faster and much quieter, requires less power, and produces less heat.
- a. Magnetic disks
 - b. Magnetic tapes
 - c. Optical CDs
 - d. Flash memory

ANS: D PTS: 1 REF: 80

53. Solid-state storage devices include solid-state disks and _____ disks.
- a. hybrid
 - b. combo
 - c. magnetic
 - d. circuit

ANS: A PTS: 1 REF: 81

54. When used in media devices such as digital cameras, camcorders, and portable MP3 players, flash memory cards are sometimes referred to as _____ cards.
- a. camera
 - b. media
 - c. creative
 - d. output

ANS: B PTS: 1 REF: 81

55. A _____ is a small flash memory module that conveniently plugs into the USB port of a PC or other digital electronics device to provide convenient, portable, high-capacity storage.
- a. flash drive
 - b. USB drive
 - c. thumb drive
 - d. all of the above

ANS: D PTS: 1 REF: 81

56. Many companies are now producing solid-state disks (SSD) using flash technology to replace the traditional magnetic hard drive in PCs. An SSD reads data _____ percent faster and writes data 150 percent faster than traditional hard drives.
- a. 100
 - b. 200
 - c. 300
 - d. 400

ANS: C PTS: 1 REF: 81

57. A hybrid drive combines the best features of flash memory and _____ storage.
- a. optical
 - b. magnetic
 - c. both a. and b.
 - d. neither a. nor b.

ANS: B PTS: 1 REF: 82

58. A notebook with an SSD is called a solid-state notebook and contains no moving parts save for the ____ drive.
- a. magnetic
 - b. optical
 - c. flash
 - d. digital

ANS: B PTS: 1 REF: 82

59. A(n) ____ device assists in capturing and entering raw data into the computer system.
- a. input
 - b. output
 - c. read-only
 - d. write-only

ANS: A PTS: 1 REF: 83

60. A(n) ____ device allows you to observe the results of computer processing with one or more of your senses.
- a. input
 - b. output
 - c. read-only
 - d. write-only

ANS: B PTS: 1 REF: 83

61. Human-readable data can be directly ____ by humans.
- a. read
 - b. understood
 - c. both a. and b.
 - d. neither a. nor b.

ANS: C PTS: 1 REF: 83

62. ____-readable data is read by computer devices.
- a. Integrated
 - b. Universal
 - c. Machine
 - d. Robot

ANS: C PTS: 1 REF: 83

63. ____ data automation involves automating data entry where the data is created, thus ensuring accuracy and timeliness.
- a. Base
 - b. Source
 - c. Input
 - d. Output

ANS: B PTS: 1 REF: 84

64. A general-purpose I/O device is designed for use in a variety of environments. This category of I/O devices includes ____.
- a. keyboards
 - b. displays
 - c. both a. and b.
 - d. neither a. nor b.

ANS: C PTS: 1 REF: 84

65. An example of a(n) ____ I/O device is the pill-sized camera from Given Imaging that, when swallowed, records images of the stomach and the small intestine as it passes through the digestive system.
- a. general-purpose
 - b. special-purpose
 - c. core-purpose
 - d. integrated-purpose

ANS: B PTS: 1 REF: 84

66. The Microsoft ____ keyboard is designed in such a way as to reduce the stress on your wrists common with traditional keyboards.
- a. flex
 - b. ergonomic
 - c. basic
 - d. pro

ANS: B PTS: 1 REF: 84

67. Different types of computer mice are available, including ____.
- a. corded and cordless
 - b. with scroll wheel or without
 - c. one-, two-, or three-button
 - d. all of the above

ANS: D PTS: 1 REF: 84

68. A(n) ____ sits stationary and allows you to control the mouse pointer by rolling a mounted ball.
- a. moveball
 - b. trackball
 - c. computerball
 - d. ergoball

ANS: B PTS: 1 REF: 84

69. Graphics ____ allow you to draw with a pen-like device on a tablet to create drawings on your display.
- a. tablets
 - b. notebooks
 - c. pads
 - d. portfolios

ANS: A PTS: 1 REF: 84

70. Notebook computers integrate the mouse as a touch-sensitive pad below the Spacebar called a ____ pad.
- a. keyboard
 - b. touch
 - c. track
 - d. mouse

ANS: B PTS: 1 REF: 85

Case-Based Critical Thinking Questions

Case 2-1

Cindy wants to add both a scanner and a webcam to her home personal computer. She is researching expansion options.

71. Cindy already knows that desktop computers provide standard ____ (sockets) for display, keyboard, printer, and mouse connectors.
- a. gateways
 - b. doorways
 - c. portals
 - d. ports

ANS: D PTS: 1 REF: 96 TOP: Critical Thinking

72. Cindy realizes that the USB ports on her computer can be used to connect the scanner and webcam and that in some cases the ports can even provide ____ to the connected device.
- a. data
 - b. power
 - c. text tags
 - d. drivers

ANS: B PTS: 1 REF: 96 TOP: Critical Thinking

73. Cindy's husband wants to add a better sound card to the computer. The sound card comes with its own circuit board, called an ____, that would be used to install it on the personal computer.
- a. expansion board
 - b. expansion card
 - c. either a. or b.
 - d. neither a. nor b.

ANS: C PTS: 1 REF: 96 TOP: Critical Thinking

74. To determine if there is room for the new sound card, Cindy removes the cover from her desktop computer and sees if there is room in the bank of expansion ____ at the rear of the computer's motherboard.
- a. openings
 - b. slots
 - c. ports
 - d. portals

ANS: B PTS: 1 REF: 97 TOP: Critical Thinking

Case-Based Critical Thinking Questions

Case 2-2

Cole has taken a job in the IT department of his local college, Eastern Tech. His boss has put him on a special assignment to see where scanners can be used more effectively within the school.

75. Cole's first stop is the Dean's office. Cole explains to the staff that page scanners and handheld scanners can convert ____ pictures, forms, text, and other images into digital images. This can help reduce the need for rooms of file cabinets.
- a. monochrome
 - b. color
 - c. either a. or b.
 - d. neither a. nor b.

ANS: C PTS: 1 REF: 87 TOP: Critical Thinking

76. Cole's next stop is the library. The librarian asked if there is a way to scan printed pages and to have the image be an editable word-processing document. Cole explains that through the use of ____ software, this is possible.
- a. character interpretation
 - b. character translation
 - c. character transformation
 - d. character recognition

ANS: D PTS: 1 REF: 87 TOP: Critical Thinking

77. Cole's last stop is to meet with the Student Council to talk about their voting procedures. Cole explains that the ballot "bubbled-in" forms can be scanned in and processed through the use of ____ recognition.
- a. optical mark
 - b. optical character
 - c. bubble
 - d. lead pencil

ANS: A PTS: 1 REF: 87 TOP: Critical Thinking

Case-Based Critical Thinking Questions

Case 2-3

Alex is a writer for *Technology Now* magazine and is writing an article on the latest input and output devices.

78. Alex interviews chemists who are using a new input device to track the motions of particles in an atom. To do so, they use an advanced laser strobe light that slices time into the shortest bit yet achieved—a(n) ____—a billionth of a billionth of a second.
- a. nanosecond
 - b. attosecond
 - c. microsecond
 - d. picosecond

ANS: B PTS: 1 REF: 94 TOP: Critical Thinking

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79. Alex also includes a section in his article about a type of computer output that a user feels, such as vibration in a game controller. This type of output is called ____.
- a. haptic
 - b. reality
 - c. embedded
 - d. tactual

ANS: A PTS: 1 REF: 94 TOP: Critical Thinking

80. The final section of Alex's article is regarding a ____ headset that can project output in the form of three-dimensional color images.
- a. virtual reality
 - b. haptic
 - c. tactual
 - d. practical

ANS: A PTS: 1 REF: 94 TOP: Critical Thinking

COMPLETION

1. In order to be useful, bits are typically organized into groups of eight called _____.

ANS: bytes

PTS: 1 REF: 59

2. A(n) _____ is an agreed-upon way of doing something within an industry.

ANS: standard

PTS: 1 REF: 59

3. The _____ number system uses only two values, 0 and 1, and is used by computers and digital devices to represent and process data.

ANS: binary

PTS: 1 REF: 59

4. Digital _____ is the trend to merge multiple digital services into one device.

ANS: convergence

PTS: 1 REF: 60

5. The _____ is an electronics component, composed typically of silicon, that opens or closes a circuit to alter the flow of electricity to store and manipulate bits.

ANS: transistor

PTS: 1 REF: 62

6. A group of integrated circuits that work together to perform the processing in a computer system is called the _____.

ANS:
CPU (central processing unit)
central processing unit (CPU)

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central processing unit
CPU

PTS: 1 REF: 63

7. The primary circuit board of a computing device is called the _____.

ANS: motherboard

PTS: 1 REF: 63

8. The primary pathways of a computing device are called _____.

ANS: buses

PTS: 1 REF: 63

9. _____ is the act of manipulating data in a manner defined by programmed instructions.

ANS: Processing

PTS: 1 REF: 63

10. The _____ unit sequentially accesses program instructions, decodes them, and coordinates the flow of data in and out of the ALU, the registers, RAM (random access memory), and other system components such as secondary storage, input, and output devices.

ANS: control

PTS: 1 REF: 64

11. _____ is temporary, or volatile, memory that stores bytes of data and program instructions for the processor to access.

ANS:
Random access memory (RAM)
RAM (Random access memory)
Random access memory
RAM

PTS: 1 REF: 64

12. The instruction phase and the execution phase together make up the _____ cycle.

ANS: machine

PTS: 1 REF: 65

13. Each CPU contains a(n) _____ clock that produces a series of electronic pulses at a predetermined rate called the clock speed.

ANS: system

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PTS: 1 REF: 66

14. _____ has been defined as the ability to maintain data within the system temporarily or permanently.

ANS: Storage

PTS: 1 REF: 71

15. _____ provides permanent storage for data and instructions that do not change, such as programs and data from the computer manufacturer, including the boot process used to start the computer.

ANS:

Read-only memory

ROM

Read only memory

ROM (Read-only memory)

Read-only memory (ROM)

PTS: 1 REF: 74

16. The _____ is a program that stores information about your hardware configuration along with the boot program.

ANS:

BIOS

basic input/output system

BIOS (basic input/output system)

basic input/output system (BIOS)

PTS: 1 REF: 74

17. Hard drives, CDs, DVDs, and flash drives are all forms of secondary _____.

ANS: storage

PTS: 1 REF: 75

18. Magnetic _____ is a storage medium used by businesses and organizations that need to store and back up large quantities of data.

ANS: tape

PTS: 1 REF: 77

19. Optical storage media, such as CDs, DVDs, and Blu-ray, store bits by using an optical laser to burn _____ into the surface of a highly reflective disc surface.

ANS: pits

PTS: 1 REF: 78

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20. _____ is an expression used to indicate that a new version of some technology still supports the specifications of the old version.

ANS: Backward compatible

PTS: 1 REF: 79

MATCHING

Identify the letter of the choice that best matches the phrase or definition.

- | | |
|------------------------|-----------------------|
| a. input device | g. flash drive |
| b. control unit | h. integrated circuit |
| c. solid-state storage | i. output device |
| d. transistor | j. motherboard |
| e. optical storage | k. USB |
| f. ROM | l. flash memory |
-
1. Form of solid-state storage that updates the data it holds in large blocks
 2. Device that allows you to observe the results of computer processing with one or more of your senses
 3. Small flash memory module that conveniently plugs into a USB port
 4. Multiple transistors integrated into a single module; stores and process bits and bytes
 5. Standard that allows a wide array of devices to connect to a computer through a common port
 6. Stores data using transistors; can be volatile or nonvolatile
 7. Assists in capturing and entering raw data into the computer system
 8. Stores bits by using an optical laser to burn pits into the surface of a highly reflective disc surface
 9. System memory that provides permanent storage for data and instructions that do not change
 10. Part of the CPU that accesses and decodes program instructions
 11. Electronics component that opens or closes a circuit to alter the flow of electricity to store and manipulate bits
 12. Primary circuit board of a computing device

- | | | |
|------------|--------|---------|
| 1. ANS: L | PTS: 1 | REF: 80 |
| 2. ANS: I | PTS: 1 | REF: 83 |
| 3. ANS: G | PTS: 1 | REF: 81 |
| 4. ANS: H | PTS: 1 | REF: 63 |
| 5. ANS: K | PTS: 1 | REF: 81 |
| 6. ANS: C | PTS: 1 | REF: 80 |
| 7. ANS: A | PTS: 1 | REF: 83 |
| 8. ANS: E | PTS: 1 | REF: 78 |
| 9. ANS: F | PTS: 1 | REF: 74 |
| 10. ANS: B | PTS: 1 | REF: 64 |
| 11. ANS: D | PTS: 1 | REF: 62 |
| 12. ANS: J | PTS: 1 | REF: 63 |

ESSAY

1. Please briefly describe these two new active areas of research in processing technologies: Quantum computing and DNA computing.

ANS:

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Quantum computing proposes the manipulation of quantum states to perform computations far faster than is possible on any conventional computer. A quantum computer doesn't use bits, but instead uses a fundamental unit of information called a quantum bit or qubit. The qubit displays properties in adherence to the laws of quantum mechanics, which differ radically from the laws of classical physics.

DNA computing, or molecular computing, is a promising new technology emerging from nanotechnology and based on DNA. Israeli scientists built the first "programmable molecular computing machine," composed of enzymes and DNA molecules, that can perform 330 trillion operations per second—more than 100,000 times the speed of the fastest PC.

PTS: 1 REF: 71 TOP: Critical Thinking

2. How are LCD screen and plasma screens made? Which has higher sales, televisions with LCD or plasma screens? Why?

ANS:

A liquid crystal display (LCD) is a thin, flat display that uses liquid crystals—an organic, oil-like material—placed between two pieces of glass to form characters and graphic images on a backlit screen.

A plasma display is a flat panel display that uses plasma gas between two flat panels to excite phosphors and create light.

Which has higher sales in TVs? Why?:

The use of plasma in displays became popular in the late 1990s because it could be used to create large, flat, thin televisions at a reasonable cost. LCD has lower limits on size and, at the time, was more expensive to manufacture. Over time, as LCD production has become less costly, and as LCD displays have increased in size, they have overtaken plasma television technology in popularity.

PTS: 1 REF: 89 TOP: Critical Thinking

3. Briefly describe the printing technique used by laser printers versus ink-jet printers. What do ppm and dpi stand for in relation to printing?

ANS:

A laser printer uses techniques similar to those of photocopiers to provide the highest-quality printed output. Color laser printers are rather expensive, so many home users settle for either a less expensive, monochrome laser or a color ink-jet printer.

An ink-jet printer sprays droplets from ink cartridges onto paper to create pixels. Although ink-jet printers create good-looking hard copy, it is not quite as polished as what laser printers provide. Also, ink may run if it gets wet, so use care when printing addresses onto envelopes and hope they aren't delivered on a rainy day.

The speed of a printer is typically measured by the number of pages printed per minute (ppm). A printer's output resolution depends on the number of dots printed per inch (dpi).

PTS: 1 REF: 91-92 TOP: Critical Thinking