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1. Which of the following computer components is an electronic device that interprets instructions and performs requested operations?

   (A) Cache
   (B) Processor
   (C) Mouse
   (D) Hard disk

2. Which of the following performs a computer’s computations and logical operations?

   (A) System bus
   (B) ROM
   (C) RAM
   (D) ALU

3. Which of the following terms is commonly used to refer to the process whereby a computer begins executing another instruction before the current instruction is completed?

   (A) Decoding
   (B) Programming
   (C) Pipelining
   (D) Instruction routing

4. Which of the following functions is performed by cache memory?

   (A) It contains the instructions needed to load a computer’s operating system to RAM.
   (B) It holds only those instructions and data that are likely to be needed next by the processor.
   (C) It contains the instructions needed to boot a PC.
   (D) It governs the timing of the instruction-execution cycle.
5. Which of the following types of memory loses data when the power to a computer is turned off?
   (A) Nonvolatile memory  
   (B) Flash memory  
   (C) Volatile memory  
   (D) Programmable read-only memory (PROM)

6. RAM units are capable of which of the following?
   (A) Receiving memory content, but not sending it  
   (B) Neither sending nor receiving memory content  
   (C) Both sending and receiving memory content  
   (D) Sending memory content, but not receiving it

7. Expanded memory space that is borrowed from a system’s hard disk is known as
   (A) USB.  
   (B) virtual memory.  
   (C) DIMM.  
   (D) parallel memory.

8. Each of the following represents a mass storage device EXCEPT
   (A) laser printers.  
   (B) floppy disks.  
   (C) hard disks.  
   (D) tapes.

9. Which of the following is an output device?
   (A) Mouse  
   (B) Joystick  
   (C) Trackball  
   (D) Speaker
10. On a traditional magnetic disk, each track contains

(A) a uniform number of sectors, standard to all magnetic disks.
(B) fewer sectors the closer it is to the center of the disk.
(C) the same number of sectors regardless of its position on the disk.
(D) more sectors the closer it is to the center of the disk.

11. Which of the following types of modems is a circuit board that plugs into one of a computer’s expansion slots?

(A) Full-duplex
(B) Internal
(C) Fax
(D) External

12. Which of the following terms is commonly used to refer to the overall conceptual design of a computer system?

(A) Mainframe
(B) Machine language
(C) System unit
(D) Architecture

13. Which of the following methods allows for the integration of an entire computer processor on a single microchip?

(A) CISC
(B) VLSI
(C) RISC
(D) MIDI

14. Which of the following is NOT a characteristic of a digital signal?

(A) It is discrete.
(B) It is finite.
(C) It degrades with reproduction.
(D) It is absolutely replicable.
15. One byte of information contains exactly

(A) 8 bps.
(B) 8 bits.
(C) 10 zeros.
(D) 10 bits.

16. Which of the following represents the current worldwide character encoding standard?

(A) ASCII
(B) Hexadecimal
(C) ANSI
(D) Unicode

17. The hexadecimal numbering system uses which of the following?

(A) Base 2
(B) Base 10
(C) Base 12
(D) Base 16

18. Each of the following represents a type of digital image format EXCEPT

(A) TIFF.
(B) GIF.
(C) RGB.
(D) PNG.

19. Data transfer rates are usually measured in terms of which of the following units of time?

(A) Seconds
(B) RPM
(C) Minutes
(D) Half-minutes
20. Which of the following is normally used to measure the clock speed of a computer?

(A) Megahertz
(B) Megabytes
(C) Megabits
(D) Megaseconds

21. Which of the following represents the principle piece of systems software on any computer?

(A) Spreadsheet software
(B) Database management software
(C) Utility program
(D) Operating system

22. Which of the following is an operating system program that loads other operating system programs and applications programs to RAM as they are needed?

(A) Partition
(B) Kernel
(C) Driver
(D) Defragmenter

23. Each of the following is a type of operating system EXCEPT

(A) UNIX.
(B) Windows.
(C) Excel.
(D) DOS.

24. Which of the following is NOT a function of a computer’s operating system?

(A) Keep track of all files stored on the computer.
(B) Facilitate communication between computers that are linked together.
(C) Maximize throughput of a computer.
(D) Protect a computer against harmful viruses.
25. In the operating system titled MS-DOS 6.2, the number 6 refers to which of the following?

(A) Command
(B) Release
(C) Version
(D) Chip

26. Which of the following is an open source operating system?

(A) MS-DOS
(B) Linux
(C) Window NT
(D) Windows ME

27. Which of the following effects is most likely the result of running a disk defragmenter program?

(A) A computer’s monitor is protected from burnout.
(B) The computer’s hard disk has more free space.
(C) The computer’s hard disk operates more quickly.
(D) The computer’s random-access memory is increased.

28. Which of the following processes involves reversing the results of the last delete operation that has taken place on a computer?

(A) Clean
(B) Undelete
(C) Backup
(D) Rename

29. Which of the following prevents individuals from gaining access to a computer without a password?

(A) File transfer utility
(B) SpeedDisk
(C) Security utility
(D) Antivirus protection
30. Each of the following represents a type of language translator used in the software development process EXCEPT

(A) assembler.
(B) compiler.
(C) interpreter.
(D) report generator.

31. Which of the following software development tools generates code based on a detailed explanation of the data that needs to be processed?

(A) Report generator
(B) Application generator
(C) Query language
(D) Identifier

32. A software development tool that enables programmers to track down hard-to-find logic errors is known as a

(A) CASE tool.
(B) code generator.
(C) source-code analyzer.
(D) debugger.

33. A graphical-user interface that is added to an operating system is known by each of the following terms EXCEPT

(A) windowing environment.
(B) Windows.
(C) operating environment.
(D) shell.

34. Which of the following types of user interfaces requires a user to instruct the computer by typing in codes or words?

(A) Graphical
(B) Menu-driven
(C) Command-line
(D) Windows
35. Modern graphical-user interfaces most likely replaced virtually all prior computer interfaces because they

(A) involved the display of prompt characters that wait for user input.
(B) did away with the need to use text-oriented command languages.
(C) were capable of saving information in computer files.
(D) had the capability of retrieving previously-stored files.

36. Each of the following is an example of a desktop publishing application program EXCEPT

(A) PageMaker.
(B) Quark XPress.
(C) FileMaker Pro.
(D) Microsoft Publisher.

37. Which of the following features of a word processing program automatically handles the end of a typed line for the user, eliminating the need to press Enter or Return when the end of the line is reached?

(A) Font
(B) Text block
(C) Cursor
(D) Word-wrap

38. Word processed texts that are aligned at both the left and right margins are referred to as

(A) centered.
(B) ragged right.
(C) justified.
(D) right aligned.

39. Each of the following is a common trait of most spreadsheet programs EXCEPT

(A) organization is based on columns and rows.
(B) calculations are performed using formulas.
(C) data is entered into worksheets.
(D) tables are defined before data is entered.
40. On a spreadsheet document, the intersection of a column and a row is called a(n)

(A) formula.
(B) operand.
(C) cell.
(D) entry bar.

41. A program consisting of recorded keystrokes that can be called on to execute those keystrokes to accomplish a task is known as a(n)

(A) macro.
(B) modeler.
(C) absolute reference.
(D) command.

42. Integrated collections of computer-based media are known as

(A) digital video.
(B) CD-ROM.
(C) multimedia.
(D) animation.

43. Which of the following is typically NOT required to run multimedia applications on a computer?

(A) Sound card
(B) High-resolution color monitor
(C) CD-ROM drive
(D) Microphone

44. Which of the following terms is commonly used to refer to a collection of related data or files pertaining to a particular subject?

(A) Network
(B) Field
(C) Record
(D) Database
45. A unique value that allows a database to access information regarding an individual record is known as a(n)

(A) match.
(B) storage property.
(C) tree.
(D) index.

46. Which of the following terms is used to refer to an information retrieval technique that allows the computer to access information directly, without having to go through a defined series of locations?

(A) Random access
(B) Hierarchical access
(C) Sequential access
(D) Binary access

47. In which of the following types of database models are files connected on the basis of logical relationships between data?

(A) Object
(B) Hierarchical
(C) Relational
(D) Network

48. Which of the following represents the standard language for querying relational databases?

(A) SQL
(B) Paradox
(C) SEQUEL
(D) QWERTY

49. Which of the following is used in graphics programs to produce new two-dimensional digital images by combining an original image with a mathematical function?

(A) Lathing
(B) Extrusion
(C) Filtering
(D) Solid modeling
50. Which of the following types of software programs relies primarily on bit-mapped graphics?

(A) Animation software  
(B) Vector graphics software  
(C) Draw software  
(D) Paint software

51. Which of the following is a commonly used Internet browser?

(A) Flash Player  
(B) Acrobat Reader  
(C) Internet Explorer  
(D) FTP

52. An Internet user who wishes to start on the Internet at a Web site that contains a broad array of information and services would be most likely to choose a(n)

(A) company homepage.  
(B) portal.  
(C) database site.  
(D) XML page.

53. Each of the following represents an Internet search engine EXCEPT

(A) Google.  
(B) Dogpile.  
(C) Emoticon.  
(D) AltaVista.

54. Internet searches are usually conducted through the use of which of the following?

(A) Listservs  
(B) Threads  
(C) Instant messages  
(D) Keywords
55. The host that services a user’s e-mail is known as a(n)
   (A) inbox.
   (B) e-mail server.
   (C) mail transfer site.
   (D) point-to-point protocol.

56. Which of the following terms is used to describe an Internet mailing list?
   (A) Chat group
   (B) Instant message
   (C) Listserv
   (D) Newsgroup

57. Which of the following enables an instant message user to sketch and illustrate ideas?
   (A) Whiteboarding
   (B) Internet telephone
   (C) FTP
   (D) Audio mail

58. Unsolicited and unwanted e-mail is known as
   (A) hacking.
   (B) filtering.
   (C) spam.
   (D) ATM.

59. Which of the following represents the generic term for high-speed Internet access?
   (A) Broadband
   (B) Bandwidth
   (C) Dial-up
   (D) POTS
60. Each of the following represents a method for connecting a computer to the Internet EXCEPT

(A) DSL.
(B) dial-up.
(C) wireless.
(D) logon.

61. Which of the following ensures that information being transmitted over the Internet is routed to its proper destination?

(A) Spoof
(B) TCP/IP
(C) POP
(D) 802.11b

62. Which of the following is a protocol that allows a user to establish a remote connection with a computer that is linked to the Internet?

(A) Port
(B) Ping
(C) Telnet
(D) VT100

63. A LAN can generally extend up to how many kilometers?

(A) 50
(B) 150
(C) 200
(D) 1,000

64. Each of the following represents an example of a WAN EXCEPT

(A) PDN.
(B) SNA.
(C) PBX.
(D) ARPANET.
65. Which of the following types of networks consists of computers connected to a central host computer?

(A) Bus  
(B) Star  
(C) Ring  
(D) Token ring

66. A network that is operated by a single organization is known as a

(A) domain.  
(B) gateway.  
(C) driver.  
(D) router.

67. In simple parity error detection, which of the following is the ratio of parity bits to data bits?

(A) 1:8  
(B) 1:7  
(C) 7:1  
(D) 8:1

68. During data communications, which of the following represents random electronic signals that can modify encoded signals in unpredictable ways?

(A) Codec  
(B) Modulator  
(C) Receiver  
(D) Noise

69. A method used to encrypt and decrypt text is known as a(n)

(A) cipher.  
(B) prime.  
(C) MHS.  
(D) access unit.
70. The Clipper Chip is an example of which of the following?

(A) Rifkin cipher
(B) Escrowed key cipher
(C) RSA algorithm
(D) Asymmetric key cipher

71. Coding of a software program is usually accomplished during which of the following stages of the software life cycle?

(A) Implementation
(B) Maintenance
(C) Analysis
(D) Design

72. Which of the following stages of the software life cycle usually occurs after a program has been tested and debugged?

(A) Coding
(B) Analysis
(C) Design
(D) Maintenance

73. Which of the following types of programming language paradigms views programming as involving the development of precise statements regarding a problem to be solved?

(A) Procedural
(B) Functional
(C) Object-oriented
(D) Declarative

74. Which of the following is an example of a declarative programming language?

(A) Prolog
(B) C
(C) C++
(D) Java
75. Which of the following types of mobile devices were analog devices?

(A) 1G  
(B) 2G  
(C) 3G  
(D) 4G

76. A complete data type consists of a predetermined storage system and a collection of

(A) abstractions.  
(B) integer values.  
(C) primitive operations.  
(D) predefined operations.

77. An operation to determine whether one symbol occurs before another in alphabetical order would most likely be performed on which of the following data types?

(A) Float  
(B) Character  
(C) Boolean  
(D) Real

78. Which of the following terms is used to refer to a type of software license that is permanent and does not require renewal?

(A) OEM  
(B) Adware  
(C) Perpetual  
(D) Subscription

79. Which of the following represents an input statement in C++?

(A) `cin >> Radius;`  
(B) `A = B + C;`  
(C) `cout << Circumference;`  
(D) `Number = 5;`
80. Which of the following terms is used to refer to the meaning expressed by a programming language?

(A) Rules
(B) Semantics
(C) Double
(D) Syntax

81. In Boolean logic, the value of the expression NOT \((y > 7)\) is

(A) true if \(y\) has the value 6.
(B) false if \(y\) has the value 3.
(C) true if \(y\) has the value 10.
(D) false if \(y\) has the value 7.

82. In executing a software program, which of the following control mechanisms represents the default case?

(A) Sequential
(B) Conditional
(C) Looping
(D) If-else

83. A binary search algorithm is an example of a(n)

(A) selection sort.
(B) insertion sort.
(C) iterative structure.
(D) recursive structure.

84. A set of instructions for performing a task to be accomplished is known as a

(A) header.
(B) procedure.
(C) global variable.
(D) local variable.
85. Which of the following is considered to be noncomputable?

(A) Halting problem
(B) Unary addition
(C) Polynomial problem
(D) Insertion sort

86. Which of the following refers to the process of attempting to fraudulently obtain private online account information by pretending to be a trusted business entity?

(A) Spamming
(B) Scamming
(C) DNS attacks
(D) Phishing

87. When the IBM PC was introduced, it ran on which of the following microprocessors?

(A) Intel 80486
(B) Intel 8088
(C) Intel 8086
(D) Intel Pentium

88. The first commercially viable computer, placed in operation at the U.S. Bureau of the Census in 1951, was known as the

(A) UNIVAC 1.
(B) IBM System/630.
(C) PDP-8.
(D) IBM 650.

89. Who of the following invented the World Wide Web in 1989?

(A) Herman Hollerith.
(B) Tim Berners-Lee.
(C) John von Neumann.
(D) Jack S. Kilby.
90. Each of the following represents a use of information technology that could potentially pose a threat to individual privacy EXCEPT

(A) enabling organizations to obtain information on an individual’s health history.
(B) providing telemarketers with access to individual contact information.
(C) requiring an individual to enter a password before logging on to a network.
(D) providing government organizations with access to an individual’s genetic profile.

91. Concerning issues of computer ethics, statements that indicate what individuals should do under certain circumstances are known as

(A) functional statements.
(B) normative statements.
(C) descriptive statements.
(D) algorithmic statements.

92. In the area of artificial intelligence, an interactive computer system that simulates the human thought process by responding to questions, asking for clarification, and making recommendations is known as a(n)

(A) expert system.
(B) pattern recognition system.
(C) neural network.
(D) digital vision-inspection system.

93. Which of the following computer programs, designed by Joseph Weizenbaum of MIT in the 1960s, was designed to converse in English and to imitate a psychotherapist?

(A) MYCIN
(B) ELIZA
(C) DENDRAL
(D) Lisa

94. The ultimate mission of a computer virus is known as its

(A) time bomb.
(B) punkware.
(C) payload.
(D) Michelangelo.
95. Which of the following is an encryption system for Internet use?

(A) PGP
(B) ITAR
(C) Key Buffer
(D) Pin Grid Array

96. Which of the following was a well-publicized macro virus that caused itself to be sent to individuals in a user’s Outlook contact list?

(A) Melissa
(B) COPPA
(C) SQL Slammer
(D) Symantec

97. Who of the following is most likely to be involved in perpetrating computer data theft?

(A) Cryptographer
(B) Thin client
(C) Cracker
(D) Spammer

98. A company’s Webmaster generally performs all of the following duties EXCEPT

(A) maintains the Web server.
(B) installs network hardware.
(C) monitors Internet traffic.
(D) responds to inquiries regarding Web site operations.

99. Which of the following professional certifications qualifies an IT specialist to provide network support for a particular brand of networking products?

(A) Microsoft Office Specialist Master Instructor
(B) Certified Novell Administrator
(C) Microsoft Certified Database Administrator
(D) Sun Certified Programmer for the Java 2 Platform
100. A company’s LAN would most likely be designed and maintained by which of the following?

(A) Network administrator
(B) Applications programmer
(C) Systems programmer
(D) DBA
1. The correct answer is B. A computer processor is an electronic device that interprets instructions and performs requested operations. Caches are specific types of storage areas within the computer.

2. The correct answer is D. Computations and logical operations are performed by a computer's ALU, or arithmetic and logic unit. A system bus is a component that helps data to move around the computer's motherboard.

3. The correct answer is C. Pipelining is the term used when a computer processor begins executing another instruction before the current instruction is completed.

4. The correct answer is B. Cache memory holds only those instructions and data that are likely to be needed next by the processor. The instructions needed to boot a PC and load its operating system to RAM are contained in the computer's BIOS software.

5. The correct answer is C. Volatile memory loses data when the power to a computer is turned off. Nonvolatile memory retains its data even when electric power is disrupted. Flash memory and PROM are both examples of nonvolatile memory.

6. The correct answer is C. RAM units are capable of both sending and receiving memory content.

7. The correct answer is B. Virtual memory is expanded memory space that is borrowed from the hard disk of a computer.

8. The correct answer is A. Mass storage devices store information in machine-readable form for access by a computer. Examples of mass storage devices include floppy disks, hard disks, and tapes. A laser printer is not a mass storage device; instead, it represents information in human-readable form.

9. The correct answer is D. A speaker is an output device that allows a user to hear audio output. Mice, joysticks, and trackballs are all examples of input devices.

10. The correct answer is C. Each track on a traditional magnetic disk contains the same number of sectors. On the tracks closest to the center of the disk, the bits of the sectors are stored more compactly than are the bits stored in those sectors on tracks near the edge of the disk. The number of tracks on a disk varies greatly across disk systems.

11. The correct answer is B. An internal modem is a circuit board that plugs into one of a computer's expansion slots. A fax modem is a type of modem that emulates a fax machine. It can be either internal or external. External modems connect to the computer via an external port.

12. The correct answer is D. The overall conceptual design of a computer system is commonly referred to as a system's architecture.

13. The correct answer is B. The very-large-scale integration (VLSI) method allows for the integration of an entire computer processor on a single microchip. This method is used to design and fabricate most computer processors today.
14. The correct answer is **C**. A digital signal is discrete, finite, and absolutely replicable. It does not degrade with reproduction the way that an analog signal does. Instead, it can be reproduced an infinite number of times with an exact degree of accuracy.

15. The correct answer is **B**. One byte of information contains exactly 8 bits.

16. The correct answer is **D**. Unicode represents the current worldwide character encoding standard. ASCII and ANSI are both older, 128-character systems that were replaced by Unicode because they weren't sufficient for encoding languages with many characters, such as Japanese.

17. The correct answer is **D**. The hexadecimal numbering system is a base 16 number system. Base 2 is used by the binary numbering system, while base 10 is used by the decimal numbering system.

18. The correct answer is **C**. RGB is not a type of digital image format. It is a type of system for representing color in digital images. TIFF, GIF, and PNG are all digital image formats.

19. The correct answer is **A**. Data transfer rates are usually measured in seconds.

20. The correct answer is **A**. The clock speed of a computer is normally measured in terms of megahertz, or millions of cycles per second. Megabytes are normally used to measure storage rates. When they are expressed in terms of time, megabytes and megabits are also used to measure data transfer rates.

21. The correct answer is **D**. A computer's operating system represents its principle piece of systems software. Utility programs are also classified as systems software, but they are less important than the operating system, which drives the main functions of the computer. Spreadsheet and database management programs are types of applications software, not systems software.

22. The correct answer is **B**. A kernel is an operating system program that loads other operating system programs and applications programs to RAM as they are needed.

23. The correct answer is **C**. Excel is not a type of operating system. It is a spreadsheet program, which is a type of applications software.

24. The correct answer is **D**. Virus protection is not performed by a computer's operating system. Instead, it is performed by antivirus software programs, which are computer utilities.

25. The correct answer is **C**. In an operating system title, the number before the period (6 in this case) refers to the version of the operating system. The number after the period (2 in this case) refers to a particular release of a given version.

26. The correct answer is **B**. Linux is an open source operating system. Its source programming code is freely available to users without licensing restrictions.

27. The correct answer is **C**. A disk defragmenter program rewrites all of the files on a hard disk to contiguous sectors. This process reduces the amount of time required for the hard disk to access files. As a result, after defragmentation, the computer's hard disk operates more quickly.
28. The correct answer is B. To undelete means to restore by reversing the results of the last delete operation that has taken place on a computer. To backup means to save additional copies of computer files for use in case working copies are damaged.

29. The correct answer is C. Security utilities prevent unauthorized computer access. They prohibit individuals from accessing the computer without a password.

30. The correct answer is D. A report generator is not a type of software language translator. It is a program that produces reports for end-users. Assemblers, compilers, and interpreters are all types of language translators.

31. The correct answer is B. An application generator creates software code based on a detailed explanation of the data that needs to be processed. Once the programmer has provided the description, the application generator then generates the code needed to create a program to perform the specified task.

32. The correct answer is D. A debugger is a software development tool that enables programmers to track down hard-to-find logic errors within a program.

33. The correct answer is B. Windows is the name for a particular type of operating system. The remaining three terms can be used interchangeably to refer to a graphical-user interface that is added to an operating system.

34. The correct answer is C. A command-line user interface requires the user to instruct the computer by typing in codes or words. Windows is an example of a graphical-user interface, which uses images to represent options. A menu-driven interface allows the user to choose a command option from a menu.

35. The correct answer is B. Modern graphical-user interfaces replaced virtually all prior computer interfaces because they did away with the need to use text-oriented command languages. Text-oriented command languages were generally very cumbersome to use. Choices C and D are incorrect, because these represent functions of operating systems.

36. The correct answer is C. FileMaker Pro is not an example of a desktop publishing application. It is an example of a database management software program.

37. The correct answer is D. The word-wrap feature of a word processing program automatically handles the end of a typed line for the user. The word-wrap feature automatically places text on the next line, eliminating the need for the user to press Enter or Return when the end of the line is reached.

38. The correct answer is C. Word processed texts that are aligned at both the left and right margins are referred to as justified. Centered texts are aligned at the center of the document. Ragged right texts are aligned at the left margin only.

39. The correct answer is D. Spreadsheet programs do not require the user to define tables before data is entered. This characteristic applies to database management programs. In spreadsheet programs, data is entered directly into worksheets without the requirement of preliminary definitions.
40. The correct answer is C. On a spreadsheet document, the intersection of a column and a row is commonly called a cell. An entry bar is the area on a spreadsheet where information is entered for a specific cell.

41. The correct answer is A. A macro is a program consisting of recorded keystrokes that can be called on to execute those keystrokes to accomplish a task. Macros can be run within specific programs, such as spreadsheet programs, to save time by automating repetitive tasks. Commands are executed by macros in an automated manner.

42. The correct answer is C. Integrated collections of computer-based media are known as multimedia. Multimedia projects can include both animation and digital video, along with sound, text, graphics, and photos. Most multimedia applications are shipped on CD-ROM, but not all CD-ROMs contain multimedia.

43. The correct answer is D. A microphone is not necessarily required to run multimedia applications on a computer. Sound cards, high-resolution color monitors, and CD-ROM drives are all typically required to run multimedia applications, as are speakers and fast computer processors.

44. The correct answer is D. A database is a collection of related data or files pertaining to a particular subject. Records and fields are two of the components that make up databases.

45. The correct answer is D. An index is a unique value that allows a database to access information regarding an individual record.

46. The correct answer is A. The random access retrieval technique allows a computer to access information directly, without having to go through a defined series of locations. Sequential access retrieval mechanisms require the computer to go through a particular sequence of locations.

47. The correct answer is C. In relational database models, files are connected on the basis of logical relationships between data. In network database models, files are connected by means of physical links or addresses.

48. The correct answer is A. SQL is the standard language for querying relational databases. SEQUEL is the name of an early query language that preceded SQL. QWERTY is the name for the standard computer keyboard layout, and Paradox is a type of database management program.

49. The correct answer is C. Filtering is the process whereby new two-dimensional digital images are produced by combining an original image with a mathematical function. Lathing, extrusion, and solid modeling are all techniques used in the creation of three-dimensional graphics.

50. The correct answer is D. Paint software programs rely primarily on bit-mapped graphics (also known as raster graphics). Draw software programs rely primarily on vector graphics.

51. The correct answer is C. Internet Explorer, produced by Microsoft, is a commonly used Internet browser.
52. The correct answer is B. A portal is a Web site that contains a broad array of information and services. Portals represent good starting points on the Internet.

53. The correct answer is C. An emoticon is an Internet symbol used to convey emotions. Google, Dogpile, and AltaVista are all names of Internet search engines.

54. The correct answer is D. Internet searches are usually conducted through the use of keywords. Keyword search terms can be singular or combined together in a phrase.

55. The correct answer is B. The host that services a user's e-mail is known as an e-mail server. E-mail is normally received in the inbox of an e-mail program.

56. The correct answer is C. An Internet mailing list is also known as a listserv. Unlike listservs, which send e-mails directly to individuals, newsgroups are accessed through using Internet browsers.

57. The correct answer is A. Whiteboarding is a capability of some instant messaging software that enables a user to sketch and illustrate ideas. Internet telephone and audio mail provide for audio, rather than visual, communication.

58. The correct answer is C. Unsolicited and unwanted e-mail is known as spam. Filtering programs enable e-mail software to filter out spam received by a user.

59. The correct answer is A. Broadband is the generic term for high-speed Internet access. POTS is an acronym for "plain old telephone services." Telephone, or dial-up, connections are low-speed forms of Internet access.

60. The correct answer is D. A logon is not a method for connecting a computer to the Internet. Individuals are usually required to logon to an account in order to gain Internet access. DSL, dial-up, and wireless all represent methods for connecting computers to the Internet.

61. The correct answer is B. The Internet transmissions protocol is known as TCP/IP. The first part of this protocol, TCP, sets the rules for packaging of information into packets. The second part of the protocol, IP, ensures that each packet of information is routed to its proper address.

62. The correct answer is C. The telnet process allows a user to establish a remote connection with a computer that is linked to the Internet. Ping is a diagnostic program that indicates whether a computer is properly connected to the Internet.

63. The correct answer is A. LANs are normally used for networks housed within a single room or building. They generally extend up to 50 kilometers.

64. The correct answer is C. The private branch exchange (PBX) is a telephone switching system that is an example of a local network. PDN, SNA, and ARPANET are all examples of wide area networks, or WANs.

65. The correct answer is B. A star network consists of computers connected to a central host computer. A bus network consists of computers connected by a common communication line. A ring network consists of
66. **The correct answer is A.** A network that is operated by a single organization is known as a domain.

67. **The correct answer is B.** In simple parity error detection, the ratio of parity bits to data bits is 1:7. One parity bit is included for every 7 bits of data to be transmitted.

68. **The correct answer is D.** Noise is the term given to random electronic signals that can modify encoded signals in unpredictable ways. A codec is a pair of methods that compresses and decompresses data.

69. **The correct answer is A.** A cipher is a method used to encrypt and decrypt text.

70. **The correct answer is B.** The Clipper Chip encryption scheme, developed by the U.S. government, is an example of an escrowed key cipher, in which a third party controls the secret key in escrow. The RSA algorithm is a public key cipher system.

71. **The correct answer is A.** Coding of a software program involves translating the design of the program into actual computer code. This process is accomplished during the implementation phase of the software life cycle.

72. **The correct answer is D.** Maintenance of a software program usually occurs after a program has been tested and debugged. The program is analyzed, designed, and then coded before it is tested.

73. **The correct answer is D.** The declarative paradigm views programming as involving the development of precise statements regarding a problem to be solved. The procedural paradigm defines the programming process as involving the development of a series of commands that can be carried out by a computer to accomplish a desired result. The functional paradigm views program development as connecting functions that each accept inputs and produce outputs.

74. **The correct answer is A.** Prolog is an example of a declarative programming language. C is an example of a procedural language. C++ and Java are both object-oriented programming languages.

75. **The correct answer is A.** In this context, the letter G refers to a "generation" of mobile devices. The first-generation (1G) devices were analog devices. Second-generation (2G) devices were the first digital devices.

76. **The correct answer is D.** A complete data type consists of two elements: a predetermined storage system and a collection of predefined operations. Primitive operations are associated specifically with primitive data types, but a complete data type can encompass other data types in addition to primitive data types. Abstract data types are user-defined data types that are complete because they include definitions of operations.

77. **The correct answer is B.** The character data type refers to data expressed using symbols. An operation to determine alphabetical order of symbols would most likely be performed on data of the character data type. Float and real data types refer to numeric data.

78. **The correct answer is C.** The term "perpetual license" is used to refer to software licenses that are
permanent and do not require renewal. Subscription licenses must be renewed after a certain period. The term OEM is used to indicate an Original Equipment Manufacturer's license for software that comes already installed on computer hardware.

79. The correct answer is A. In C++, the statement "cin >> Radius;" represents an input statement. The statement "cout << Circumference" represents an output statement.

80. The correct answer is B. The term "semantics" is used to refer to the meaning expressed by a programming language. The syntax of the language is its grammatical structure. Rules are used to define the syntax of a programming language.

81. The correct answer is A. In Boolean logic, the value of the expression NOT \( y > 7 \) is true if the expression \( y > 7 \) is false. The expression \( y > 7 \) is false whenever \( y \) is less than 7. If \( y \) has the value 6, then the expression \( y > 7 \) is false, and the value of the expression NOT \( y > 7 \) is true.

82. The correct answer is A. In executing a software program, the sequential control mechanism represents the default case. Sequential control occurs automatically if there are no instances of other types of control mechanisms.

83. The correct answer is D. A binary search algorithm is an example of a recursive structure. In recursive structures, a set of instructions is repeated as a subtask of itself. Selection sorts and insertion sorts are examples of iterative structures, in which a set of instructions is completed and then repeated in its entirety.

84. The correct answer is B. A procedure is a set of instructions for performing a task to be accomplished. A procedure's header is a definitional statement that begins the procedure.

85. The correct answer is A. The halting problem is the problem of trying to predict in advance whether a program will terminate if it is begun under particular conditions. The halting problem is considered unsolvable, or noncomputable, because its solution lies beyond the capacity of any computer. Unary addition, polynomial problems, and insertion sorts are all computable.

86. The correct answer is D. Phishing refers to the process of attempting to obtain account passwords, usernames, or other secure information by pretending to be a trusted entity. Phishing is a type of scam, or fraudulent act. Spamming involves sending unrequested email communications, particularly advertisements, to large numbers of recipients simultaneously.

87. The correct answer is B. The IBM PC originally ran on the Intel 8088 microprocessor. IBM chose this 8-bit processor because of the wide availability of 8-bit components. The Intel 8086 processor had been developed by the time that the IBM PC was introduced, but IBM chose against using this 16-bit processor because most available peripheral equipment was compatible only with 8-bit processors at that time.

88. The correct answer is A. The UNIVAC 1 was the first commercially viable computer. It was placed in operation in 1951 at the U.S. Bureau of the Census. The IBM 650 was introduced in 1954. IBM made its commitment to develop computers after the success of the UNIVAC 1.

89. The correct answer is B. The World Wide Web was invented in 1989 by former Swiss physicist Tim

90. The correct answer is C. Protecting networks by requiring passwords is not likely to pose a threat to individual privacy. Individual privacy can be potentially threatened by uses of technology that enable organizations to gain access to an individual's personal information, such as health history, contact information, and genetic profiles.

91. The correct answer is B. In computer ethics, normative statements are those that indicate what individuals should do under particular circumstances. Descriptive statements describe how people behave under particular ethical rules.

92. The correct answer is A. An expert system is an interactive computer system that simulates the human thought process by responding to questions, asking for clarification, and making recommendations.

93. The correct answer is B. ELIZA was a computer program designed by Joseph Weizenbaum in the 1960s to converse in English and to imitate a psychotherapist. Lisa was a precursor to the Apple Macintosh computer. Lisa, marketed unsuccessfully by Apple, was the first commercial computer with a purely graphical operating system.

94. The correct answer is C. The ultimate mission of a computer virus is known as its payload. A time bomb is a type of computer virus that is triggered by a certain event in time. Michelangelo is a type of time bomb virus.

95. The correct answer is A. PGP stands for Pretty Good Privacy, an encryption system developed for Internet use by Phil Zimmerman in 1991. ITAR, or International Traffic in Arms Regulations, is a set of U.S. regulations governing encryption software.

96. The correct answer is A. The Melissa virus was a well-publicized macro virus that caused itself to be sent to individuals in a user's Outlook contact list. SQL Slammer was a rapidly spreading worm virus.

97. The correct answer is C. A cracker is a computer vandal who is skilled at gaining unauthorized access into computer systems. Crackers are therefore most likely to be involved in perpetrating computer data theft and other crimes. A spammer sends unauthorized and unwanted e-mail.

98. The correct answer is B. Installation of network hardware would most likely be the responsibility of a network administrator rather than a Webmaster. Webmasters generally maintain Web servers, monitor Internet traffic, and respond to inquiries regarding Web site operations. They may also help design and update Web pages.

99. The correct answer is B. A Certified Novell Administrator, or CNA, is certified to provide network support for Novell networking products. A Sun Certified Programmer for the Java 2 Platform is certified to program in Java, a programming language that is popular with Web-based applications.

100. The correct answer is A. The network administrator in an organization is responsible for designing and maintaining the organization's networks, including local area networks (LANs) and wide area networks.
(WANs). A DBA, or database administrator, specializes in maintaining databases.