Chapter 06

Input and Output

**Multiple Choice Questions**

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| 1. | \_\_\_\_\_\_\_ is any data or instructions that are used by a computer.      |  |  | | --- | --- | | A. | Digital |  |  |  | | --- | --- | | B. | Output |  |  |  | | --- | --- | | C. | Information |  |  |  | | --- | --- | | D. | Input | |

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| 2. | The arrangement of keys on a keyboard, QWERTY reflects the keyboard layout by \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | representing the phonetics of the alphabets most closely associated with the keyboard |  |  |  | | --- | --- | | B. | taking the letters of the first six alphabetic characters found on the top row of keys |  |  |  | | --- | --- | | C. | using the alphabetic characters most frequently used on the keyboard |  |  |  | | --- | --- | | D. | using the letters of the alphabetic characters that are closest to access while typing | |

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| 3. | Keyboards that are widely used on various smartphones and other small portable devices, and which are designed primarily for communicating via texting and connecting to the Web.      |  |  | | --- | --- | | A. | Thumb |  |  |  | | --- | --- | | B. | Traditional |  |  |  | | --- | --- | | C. | Notebook |  |  |  | | --- | --- | | D. | Combination | |

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| 4. | Type of keyboard that uses a touch screen as the input device.      |  |  | | --- | --- | | A. | PDA |  |  |  | | --- | --- | | B. | Wireless |  |  |  | | --- | --- | | C. | Traditional |  |  |  | | --- | --- | | D. | Virtual | |

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| 5. | A keyboard key, like Caps Lock, that turns a feature on or off is called a \_\_\_\_\_\_\_ key.      |  |  | | --- | --- | | A. | power |  |  |  | | --- | --- | | B. | toggle |  |  |  | | --- | --- | | C. | function |  |  |  | | --- | --- | | D. | combination | |

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| 6. | This type of mouse emits and senses light to detect mouse movement.      |  |  | | --- | --- | | A. | Mechanical |  |  |  | | --- | --- | | B. | Cordless |  |  |  | | --- | --- | | C. | Wireless |  |  |  | | --- | --- | | D. | Optical | |

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| 7. | The study of human factors related to things people use.      |  |  | | --- | --- | | A. | Headgear |  |  |  | | --- | --- | | B. | RSI |  |  |  | | --- | --- | | C. | Technical study |  |  |  | | --- | --- | | D. | Ergonomics | |

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| 8. | These screens can be touched with more than one finger, which allows for interactions such as rotating graphical objects on the screen with your hand or zooming in and out by pinching and stretching your fingers.      |  |  | | --- | --- | | A. | Touch |  |  |  | | --- | --- | | B. | CRT |  |  |  | | --- | --- | | C. | Multitouch |  |  |  | | --- | --- | | D. | LCD | |

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| 9. | Which of the following is not a type of scanning device?      |  |  | | --- | --- | | A. | Optical scanner |  |  |  | | --- | --- | | B. | Bar code reader |  |  |  | | --- | --- | | C. | Stylus |  |  |  | | --- | --- | | D. | Character and mark recognition | |

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| 10. | Bar code readers use \_\_\_\_\_\_\_ embedded in them to read bar codes.      |  |  | | --- | --- | | A. | coprocessors |  |  |  | | --- | --- | | B. | magnetic cells |  |  |  | | --- | --- | | C. | RFID microchip |  |  |  | | --- | --- | | D. | photoelectric cells | |

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| 11. | This reading device is used in banks to read the numbers on the bottom of checks and deposit slips.      |  |  | | --- | --- | | A. | MICR |  |  |  | | --- | --- | | B. | OCR |  |  |  | | --- | --- | | C. | OMR |  |  |  | | --- | --- | | D. | UPC | |

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| 12. | Which of the following types of character recognition systems is used for standardized multiple-choice testing?      |  |  | | --- | --- | | A. | UPC |  |  |  | | --- | --- | | B. | MICR |  |  |  | | --- | --- | | C. | OMR |  |  |  | | --- | --- | | D. | OCR | |

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| 13. | OMR, OCR, and MICR are all types of \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | Radio Frequency Card Readers |  |  |  | | --- | --- | | B. | magnetic card readers |  |  |  | | --- | --- | | C. | bar code readers |  |  |  | | --- | --- | | D. | character and mark recognition devices | |

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| 14. | \_\_\_\_\_\_\_-input devices convert sounds into a form that can be processed by the system unit.      |  |  | | --- | --- | | A. | Electrolyzing |  |  |  | | --- | --- | | B. | Plotting |  |  |  | | --- | --- | | C. | Webcam |  |  |  | | --- | --- | | D. | Audio | |

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| 15. | The most widely used audio-input device is the \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | Webcam |  |  |  | | --- | --- | | B. | radio frequency card reader |  |  |  | | --- | --- | | C. | microphone |  |  |  | | --- | --- | | D. | stylus | |

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| 16. | The series of dots that form the image on a monitor are called \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | picas |  |  |  | | --- | --- | | B. | bits |  |  |  | | --- | --- | | C. | pixels |  |  |  | | --- | --- | | D. | bytes | |

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| 17. | This indicates the monitor's ability to display colors by comparing the light intensity of the brightest white to the darkest black.      |  |  | | --- | --- | | A. | Contrast ratio |  |  |  | | --- | --- | | B. | Dot Pitch |  |  |  | | --- | --- | | C. | Active display area |  |  |  | | --- | --- | | D. | Resolution | |

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| 18. | The distance between each pixel.      |  |  | | --- | --- | | A. | Dot pitch |  |  |  | | --- | --- | | B. | Refresh rate |  |  |  | | --- | --- | | C. | Resolution |  |  |  | | --- | --- | | D. | Word size | |

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| 19. | The size, or \_\_\_\_\_\_\_, is measured by the diagonal length of a monitor's viewing area.      |  |  | | --- | --- | | A. | resolution |  |  |  | | --- | --- | | B. | active display area |  |  |  | | --- | --- | | C. | aspect ratio |  |  |  | | --- | --- | | D. | dot pitch | |

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| 20. | The proportional relationship between a display's width and height.      |  |  | | --- | --- | | A. | Aspect ratio |  |  |  | | --- | --- | | B. | Resolution |  |  |  | | --- | --- | | C. | Dot pitch |  |  |  | | --- | --- | | D. | Clock speed | |

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| 21. | A dedicated, mobile device for storing and displaying e-books and other electronic media including electronic newspapers and magazines.      |  |  | | --- | --- | | A. | E-book reader |  |  |  | | --- | --- | | B. | Interactive whiteboard |  |  |  | | --- | --- | | C. | HDTV |  |  |  | | --- | --- | | D. | Flat panel monitor | |

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| 22. | Specialized devices with a large display connected to a computer projector and are widely used in classrooms and corporate boardrooms.      |  |  | | --- | --- | | A. | Scanners |  |  |  | | --- | --- | | B. | HDTV |  |  |  | | --- | --- | | C. | E-books |  |  |  | | --- | --- | | D. | Digital or interactive whiteboards | |

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| 23. | What kind of specialized monitor is especially useful for graphic artists, designers, and publishers?      |  |  | | --- | --- | | A. | Flat-panel monitor |  |  |  | | --- | --- | | B. | CRT monitor |  |  |  | | --- | --- | | C. | High-definition television (HDTV) |  |  |  | | --- | --- | | D. | E-book | |

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| 24. | Which of the following statements is incorrect?      |  |  | | --- | --- | | A. | Printer resolution is measured in dpi (dots per inch). |  |  |  | | --- | --- | | B. | Printer output is often called hard copy. |  |  |  | | --- | --- | | C. | Memory within a printer is used to store printing instructions and documents waiting to be printed. |  |  |  | | --- | --- | | D. | Printer speed is measured in the number of words printed per minute. | |

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| 25. | Two categories of laser printers are \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | thermal and personal |  |  |  | | --- | --- | | B. | personal and shared |  |  |  | | --- | --- | | C. | ink-jet and high-definition |  |  |  | | --- | --- | | D. | active-matrix and passive matrix | |

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| 26. | Which of the following printer features enables you to print on both sides of a sheet of paper?      |  |  | | --- | --- | | A. | Simplex |  |  |  | | --- | --- | | B. | Duplex |  |  |  | | --- | --- | | C. | Resolution |  |  |  | | --- | --- | | D. | Dual Matrix | |

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| 27. | Printers connected to the Internet that provide printing services to others on the Internet are called \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | dot-matrix printers |  |  |  | | --- | --- | | B. | thermal printers |  |  |  | | --- | --- | | C. | plotters |  |  |  | | --- | --- | | D. | cloud printers | |

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| 28. | The most widely used audio-output devices.      |  |  | | --- | --- | | A. | microphones |  |  |  | | --- | --- | | B. | speakers and headsets |  |  |  | | --- | --- | | C. | cloud printers |  |  |  | | --- | --- | | D. | faxes | |

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| 29. | Which of the following allows the transmission of telephone calls over computer networks?      |  |  | | --- | --- | | A. | Faxing |  |  |  | | --- | --- | | B. | Cell phones |  |  |  | | --- | --- | | C. | PDAs |  |  |  | | --- | --- | | D. | Voice over IP | |

**True / False Questions**

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| 30. | The most widely used input devices are monitors, printers, and keyboards.    True    False |

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| 31. | Function keys provide shortcuts for specific tasks.    True    False |

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| 32. | An optical mouse uses light in order to detect movement.    True    False |

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| 33. | A touch screen is classified as a special type of scanning device.    True    False |

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| 34. | A stylus uses pressure to draw images on a screen.    True    False |

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| 35. | Multitouch screens allow for interaction such as rotating graphical objects on the screen with your hand.    True    False |

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| 36. | Optical scanners recognize individual letters or images.    True    False |

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| 37. | A magnetic card reader does not require the card to actually make contact with the reader.    True    False |

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| 38. | An MICR device senses the presence or absence of a mark, such as a pencil mark.    True    False |

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| 39. | The monitor size is measured by the diagonal length of the viewing area.    True    False |

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| 40. | Output devices are any hardware used to provide or to create output.    True    False |

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| 41. | 3-D HDTV requires special viewing glasses in order to achieve a three-dimensional viewing experience.    True    False |

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| 42. | Digital or interactive whiteboards display a computer's desktop and can be controlled using a special pen or a finger.    True    False |

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| 43. | Discarded CRTs are a serious threat to the environment, given their high content levels of lead and other hazardous materials.    True    False |

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| 44. | Resolution for a printer is a measure of the clarity of images produced, measured in dpi (dots per inch).    True    False |

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| 45. | Shared laser printers typically support color, are more expensive, and are used by a group of people.    True    False |

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| 46. | Cloud printers provide printing services to users without access to the Internet.    True    False |

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| 47. | Thermal printers use heat elements to produce images on heat-sensitive paper and are used at ATMs and gasoline pumps.    True    False |

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| 48. | Wireless audio-output connections typically use Bluetooth technology.    True    False |

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| 49. | MFDs are used to capture as well as play back recorded sounds.    True    False |

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| 50. | Telephony, also known as Internet telephony, is the VoIP application that uses the Internet rather than traditional telephone lines to support voice communication.    True    False |

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| 51. | Skype provides audio and video service that requires the installation of special hardware and software.    True    False |

**Fill in the Blank Questions**

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| 52. | \_\_\_\_\_\_\_ keyboards are used on smartphones and other small portable devices.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 53. | The mouse, joysticks, touch screens, and styluses are all types of \_\_\_\_\_\_\_ devices.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 54. | Flatbed, document, and portable are types of \_\_\_\_\_\_\_ that accept documents and convert them into machine-readable form.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 55. | Supermarkets use \_\_\_\_\_\_\_ code readers to scan codes printed on product containers.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 56. | The most common card reader is the \_\_\_\_\_\_\_ card reader which reads encoded information stored on a thin magnetic strip located on the back of the card.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 57. | \_\_\_\_\_\_\_ tags are tiny chips that can be embedded into almost anything and contain information used to track and locate lost pets; to monitor production and update inventory; to record prices, product descriptions, and locations of retail items.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 58. | Character and \_\_\_\_\_\_\_ recognition devices are scanners that are able to recognize special characters and marks.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 59. | \_\_\_\_\_\_\_ are specialized digital video cameras that capture images.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 60. | Digital \_\_\_\_\_\_\_ connect to computers and project computer output and can control the computer with the use of a special pen.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 61. | \_\_\_\_\_\_\_ printers use a technology similar to that used in a photocopy machine.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 62. | \_\_\_\_\_\_\_ printers are widely used with ATMs.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 63. | \_\_\_\_\_\_\_ printers are printers connected to the Internet that provide printing services to others on the Internet.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 64. | \_\_\_\_\_\_\_ are special-purpose printers typically found in architectural and engineering environments.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 65. | \_\_\_\_\_\_\_ telephones are specialized input and output devices for receiving and sending voice communication.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 66. | \_\_\_\_\_\_\_ combine the capabilities of a scanner, printer, fax, and copy machine.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 67. | Voice over \_\_\_\_\_\_\_ is the transmission of telephone calls over computer networks.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 68. | \_\_\_\_\_\_\_ pitch is the distance between pixels on a monitor.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 69. | \_\_\_\_\_\_\_ ratio indicates a monitor's ability to display colors by comparing the light intensity of the brightest white to the darkest black.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 70. | \_\_\_\_\_\_\_ ratio indicates the proportional relationship between a display's width and height.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 71. | \_\_\_\_\_\_\_ is any injury that is caused by fast, repetitive work that can generate neck, wrist, hand, and arm pain.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Essay Questions**

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| 72. | Describe some recommendations to avoid health risks associated with computer use. |

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| 73. | How does an optical scanner work? |

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| 74. | How does a bar code reader work? |

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| 75. | What are character and mark recognition devices? Describe their uses. |

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| 76. | How is voice recognition technology being used today? |

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| 77. | Describe the basic distinguishing features of monitors that affect clarity including resolution, dot pitch, contrast ratio, size, and aspect ratio. |

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| 78. | What is HDTV? What is 3D HDTV? |

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| 79. | What is a multifunctional device? What are the advantages/disadvantages of such a device? |

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| 80. | What is VoIP and how does it work? |

Chapter 06 Input and Output Answer Key

**Multiple Choice Questions**

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| 1. *(p. 140)* | \_\_\_\_\_\_\_ is any data or instructions that are used by a computer.      |  |  | | --- | --- | | A. | Digital |  |  |  | | --- | --- | | B. | Output |  |  |  | | --- | --- | | C. | Information |  |  |  | | --- | --- | | **D.** | Input | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-01 Define input Topic: What is Input?* |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2. *(p. 141)* | The arrangement of keys on a keyboard, QWERTY reflects the keyboard layout by \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | representing the phonetics of the alphabets most closely associated with the keyboard |  |  |  | | --- | --- | | **B.** | taking the letters of the first six alphabetic characters found on the top row of keys |  |  |  | | --- | --- | | C. | using the alphabetic characters most frequently used on the keyboard |  |  |  | | --- | --- | | D. | using the letters of the alphabetic characters that are closest to access while typing | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 1 Easy Learning Outcome: 06-02 Describe keyboard entry including types and features of keyboards Topic: Keyboard Entry* |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3. *(p. 141)* | Keyboards that are widely used on various smartphones and other small portable devices, and which are designed primarily for communicating via texting and connecting to the Web.      |  |  | | --- | --- | | **A.** | Thumb |  |  |  | | --- | --- | | B. | Traditional |  |  |  | | --- | --- | | C. | Notebook |  |  |  | | --- | --- | | D. | Combination | |

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| *AACSB: Communication AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 06-02 Describe keyboard entry including types and features of keyboards Topic: Keyboard Entry* |

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| 4. *(p. 141)* | Type of keyboard that uses a touch screen as the input device.      |  |  | | --- | --- | | A. | PDA |  |  |  | | --- | --- | | B. | Wireless |  |  |  | | --- | --- | | C. | Traditional |  |  |  | | --- | --- | | **D.** | Virtual | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 06-02 Describe keyboard entry including types and features of keyboards Topic: Keyboard Entry* |

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| 5. *(p. 141)* | A keyboard key, like Caps Lock, that turns a feature on or off is called a \_\_\_\_\_\_\_ key.      |  |  | | --- | --- | | A. | power |  |  |  | | --- | --- | | **B.** | toggle |  |  |  | | --- | --- | | C. | function |  |  |  | | --- | --- | | D. | combination | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-02 Describe keyboard entry including types and features of keyboards Topic: Keyboard Entry* |

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| 6. *(p. 143)* | This type of mouse emits and senses light to detect mouse movement.      |  |  | | --- | --- | | A. | Mechanical |  |  |  | | --- | --- | | B. | Cordless |  |  |  | | --- | --- | | C. | Wireless |  |  |  | | --- | --- | | **D.** | Optical | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-03 Identify different pointing devices including game controllers and styluses Topic: Pointing Devices* |

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| 7. *(p. 157)* | The study of human factors related to things people use.      |  |  | | --- | --- | | A. | Headgear |  |  |  | | --- | --- | | B. | RSI |  |  |  | | --- | --- | | C. | Technical study |  |  |  | | --- | --- | | **D.** | Ergonomics | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-11 Explain ergonomics and ways to minimize physical damage Topic: Pointing Devices* |

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| 8. *(p. 142)* | These screens can be touched with more than one finger, which allows for interactions such as rotating graphical objects on the screen with your hand or zooming in and out by pinching and stretching your fingers.      |  |  | | --- | --- | | A. | Touch |  |  |  | | --- | --- | | B. | CRT |  |  |  | | --- | --- | | **C.** | Multitouch |  |  |  | | --- | --- | | D. | LCD | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-03 Identify different pointing devices including game controllers and styluses Topic: Pointing Devices* |

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| 9. *(p. 143)* | Which of the following is not a type of scanning device?      |  |  | | --- | --- | | A. | Optical scanner |  |  |  | | --- | --- | | B. | Bar code reader |  |  |  | | --- | --- | | **C.** | Stylus |  |  |  | | --- | --- | | D. | Character and mark recognition | |

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| *AACSB: Analytic AACSB: Technology Accessibility: Keyboard Navigation Blooms: Analyze Difficulty: 2 Medium Learning Outcome: 06-03 Identify different pointing devices including game controllers and styluses Topic: Pointing Devices Topic: Scanning Devices* |

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| 10. *(p. 144)* | Bar code readers use \_\_\_\_\_\_\_ embedded in them to read bar codes.      |  |  | | --- | --- | | A. | coprocessors |  |  |  | | --- | --- | | B. | magnetic cells |  |  |  | | --- | --- | | C. | RFID microchip |  |  |  | | --- | --- | | **D.** | photoelectric cells | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 3 Hard Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 11. *(p. 145)* | This reading device is used in banks to read the numbers on the bottom of checks and deposit slips.      |  |  | | --- | --- | | **A.** | MICR |  |  |  | | --- | --- | | B. | OCR |  |  |  | | --- | --- | | C. | OMR |  |  |  | | --- | --- | | D. | UPC | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 12. *(p. 145)* | Which of the following types of character recognition systems is used for standardized multiple-choice testing?      |  |  | | --- | --- | | A. | UPC |  |  |  | | --- | --- | | B. | MICR |  |  |  | | --- | --- | | **C.** | OMR |  |  |  | | --- | --- | | D. | OCR | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 13. *(p. 145)* | OMR, OCR, and MICR are all types of \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | Radio Frequency Card Readers |  |  |  | | --- | --- | | B. | magnetic card readers |  |  |  | | --- | --- | | C. | bar code readers |  |  |  | | --- | --- | | **D.** | character and mark recognition devices | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 14. *(p. 146)* | \_\_\_\_\_\_\_-input devices convert sounds into a form that can be processed by the system unit.      |  |  | | --- | --- | | A. | Electrolyzing |  |  |  | | --- | --- | | B. | Plotting |  |  |  | | --- | --- | | C. | Webcam |  |  |  | | --- | --- | | **D.** | Audio | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-05 Recognize image capturing and audio-input devices Topic: Audio-Input Devices* |

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| 15. *(p. 146)* | The most widely used audio-input device is the \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | Webcam |  |  |  | | --- | --- | | B. | radio frequency card reader |  |  |  | | --- | --- | | **C.** | microphone |  |  |  | | --- | --- | | D. | stylus | |

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| *AACSB: Communication AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-05 Recognize image capturing and audio-input devices Topic: Audio-Input Devices* |

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| 16. *(p. 147)* | The series of dots that form the image on a monitor are called \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | picas |  |  |  | | --- | --- | | B. | bits |  |  |  | | --- | --- | | **C.** | pixels |  |  |  | | --- | --- | | D. | bytes | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 17. *(p. 148)* | This indicates the monitor's ability to display colors by comparing the light intensity of the brightest white to the darkest black.      |  |  | | --- | --- | | **A.** | Contrast ratio |  |  |  | | --- | --- | | B. | Dot Pitch |  |  |  | | --- | --- | | C. | Active display area |  |  |  | | --- | --- | | D. | Resolution | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 18. *(p. 148)* | The distance between each pixel.      |  |  | | --- | --- | | **A.** | Dot pitch |  |  |  | | --- | --- | | B. | Refresh rate |  |  |  | | --- | --- | | C. | Resolution |  |  |  | | --- | --- | | D. | Word size | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 19. *(p. 148)* | The size, or \_\_\_\_\_\_\_, is measured by the diagonal length of a monitor's viewing area.      |  |  | | --- | --- | | A. | resolution |  |  |  | | --- | --- | | **B.** | active display area |  |  |  | | --- | --- | | C. | aspect ratio |  |  |  | | --- | --- | | D. | dot pitch | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 20. *(p. 148)* | The proportional relationship between a display's width and height.      |  |  | | --- | --- | | **A.** | Aspect ratio |  |  |  | | --- | --- | | B. | Resolution |  |  |  | | --- | --- | | C. | Dot pitch |  |  |  | | --- | --- | | D. | Clock speed | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 21. *(p. 148)* | A dedicated, mobile device for storing and displaying e-books and other electronic media including electronic newspapers and magazines.      |  |  | | --- | --- | | **A.** | E-book reader |  |  |  | | --- | --- | | B. | Interactive whiteboard |  |  |  | | --- | --- | | C. | HDTV |  |  |  | | --- | --- | | D. | Flat panel monitor | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 22. *(p. 150)* | Specialized devices with a large display connected to a computer projector and are widely used in classrooms and corporate boardrooms.      |  |  | | --- | --- | | A. | Scanners |  |  |  | | --- | --- | | B. | HDTV |  |  |  | | --- | --- | | C. | E-books |  |  |  | | --- | --- | | **D.** | Digital or interactive whiteboards | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 23. *(p. 150)* | What kind of specialized monitor is especially useful for graphic artists, designers, and publishers?      |  |  | | --- | --- | | A. | Flat-panel monitor |  |  |  | | --- | --- | | B. | CRT monitor |  |  |  | | --- | --- | | **C.** | High-definition television (HDTV) |  |  |  | | --- | --- | | D. | E-book | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 24. *(p. 151-152)* | Which of the following statements is incorrect?      |  |  | | --- | --- | | A. | Printer resolution is measured in dpi (dots per inch). |  |  |  | | --- | --- | | B. | Printer output is often called hard copy. |  |  |  | | --- | --- | | C. | Memory within a printer is used to store printing instructions and documents waiting to be printed. |  |  |  | | --- | --- | | **D.** | Printer speed is measured in the number of words printed per minute. | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Analyze Difficulty: 3 Hard Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 25. *(p. 152)* | Two categories of laser printers are \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | thermal and personal |  |  |  | | --- | --- | | **B.** | personal and shared |  |  |  | | --- | --- | | C. | ink-jet and high-definition |  |  |  | | --- | --- | | D. | active-matrix and passive matrix | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 26. *(p. 152)* | Which of the following printer features enables you to print on both sides of a sheet of paper?      |  |  | | --- | --- | | A. | Simplex |  |  |  | | --- | --- | | **B.** | Duplex |  |  |  | | --- | --- | | C. | Resolution |  |  |  | | --- | --- | | D. | Dual Matrix | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 27. *(p. 153)* | Printers connected to the Internet that provide printing services to others on the Internet are called \_\_\_\_\_\_\_.      |  |  | | --- | --- | | A. | dot-matrix printers |  |  |  | | --- | --- | | B. | thermal printers |  |  |  | | --- | --- | | C. | plotters |  |  |  | | --- | --- | | **D.** | cloud printers | |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 28. *(p. 153)* | The most widely used audio-output devices.      |  |  | | --- | --- | | A. | microphones |  |  |  | | --- | --- | | B. | speakers and headsets |  |  |  | | --- | --- | | **C.** | cloud printers |  |  |  | | --- | --- | | D. | faxes | |

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| *AACSB: Communication AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-09 Recognize different audio-output devices Topic: Audio-Output Devices* |

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| 29. *(p. 154)* | Which of the following allows the transmission of telephone calls over computer networks?      |  |  | | --- | --- | | A. | Faxing |  |  |  | | --- | --- | | B. | Cell phones |  |  |  | | --- | --- | | C. | PDAs |  |  |  | | --- | --- | | **D.** | Voice over IP | |

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| *AACSB: Communication AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 06-10 Define combination input and output devices including multifunctional devices, Internet telephones, and VR headgear and gloves Topic: Combination Input and Output Devices* |

**True / False Questions**

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| 30. *(p. 140)* | The most widely used input devices are monitors, printers, and keyboards.    **FALSE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-01 Define input Topic: What is Input?* |

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| 31. *(p. 141)* | Function keys provide shortcuts for specific tasks.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-02 Describe keyboard entry including types and features of keyboards Topic: Keyboard Entry* |

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| 32. *(p. 142)* | An optical mouse uses light in order to detect movement.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-03 Identify different pointing devices including game controllers and styluses Topic: Pointing Devices* |

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| 33. *(p. 142)* | A touch screen is classified as a special type of scanning device.    **FALSE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-03 Identify different pointing devices including game controllers and styluses Topic: Pointing Devices* |

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| 34. *(p. 143)* | A stylus uses pressure to draw images on a screen.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-03 Identify different pointing devices including game controllers and styluses Topic: Pointing Devices* |

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| 35. *(p. 142)* | Multitouch screens allow for interaction such as rotating graphical objects on the screen with your hand.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-03 Identify different pointing devices including game controllers and styluses Topic: Pointing Devices* |

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| 36. *(p. 144)* | Optical scanners recognize individual letters or images.    **FALSE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 37. *(p. 144)* | A magnetic card reader does not require the card to actually make contact with the reader.    **FALSE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Analyze Difficulty: 3 Hard Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 38. *(p. 145)* | An MICR device senses the presence or absence of a mark, such as a pencil mark.    **FALSE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 39. *(p. 148)* | The monitor size is measured by the diagonal length of the viewing area.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 2 Medium Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 40. *(p. 147)* | Output devices are any hardware used to provide or to create output.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-06 Define output. Topic: What is Output?* |

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| 41. *(p. 150)* | 3-D HDTV requires special viewing glasses in order to achieve a three-dimensional viewing experience.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 42. *(p. 150)* | Digital or interactive whiteboards display a computer's desktop and can be controlled using a special pen or a finger.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 43. *(p. 150)* | Discarded CRTs are a serious threat to the environment, given their high content levels of lead and other hazardous materials.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 44. *(p. 151)* | Resolution for a printer is a measure of the clarity of images produced, measured in dpi (dots per inch).    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 45. *(p. 152)* | Shared laser printers typically support color, are more expensive, and are used by a group of people.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 46. *(p. 153)* | Cloud printers provide printing services to users without access to the Internet.    **FALSE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 47. *(p. 153)* | Thermal printers use heat elements to produce images on heat-sensitive paper and are used at ATMs and gasoline pumps.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 48. *(p. 153)* | Wireless audio-output connections typically use Bluetooth technology.    **TRUE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-09 Recognize different audio-output devices Topic: Audio-Output Devices* |

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| 49. *(p. 153-154)* | MFDs are used to capture as well as play back recorded sounds.    **FALSE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 3 Hard Learning Outcome: 06-09 Recognize different audio-output devices Topic: Audio-Output Devices* |

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| 50. *(p. 154)* | Telephony, also known as Internet telephony, is the VoIP application that uses the Internet rather than traditional telephone lines to support voice communication.    **TRUE** |

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| *AACSB: Communication AACSB: Technology Accessibility: Keyboard Navigation Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-10 Define combination input and output devices including multifunctional devices, Internet telephones, and VR headgear and gloves Topic: Combination Input and Output Devices* |

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| 51. *(p. 154)* | Skype provides audio and video service that requires the installation of special hardware and software.    **FALSE** |

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| *AACSB: Technology Accessibility: Keyboard Navigation Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-10 Define combination input and output devices including multifunctional devices, Internet telephones, and VR headgear and gloves Topic: Combination Input and Output Devices* |

**Fill in the Blank Questions**

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| 52. *(p. 141)* | \_\_\_\_\_\_\_ keyboards are used on smartphones and other small portable devices.    **Thumb** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-02 Describe keyboard entry including types and features of keyboards Topic: Keyboard Entry* |

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| 53. *(p. 142)* | The mouse, joysticks, touch screens, and styluses are all types of \_\_\_\_\_\_\_ devices.    **pointing** |

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| *AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-03 Identify different pointing devices including game controllers and styluses Topic: Pointing Devices* |

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| 54. *(p. 144)* | Flatbed, document, and portable are types of \_\_\_\_\_\_\_ that accept documents and convert them into machine-readable form.    **scanners** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 55. *(p. 144)* | Supermarkets use \_\_\_\_\_\_\_ code readers to scan codes printed on product containers.    **bar** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 56. *(p. 144)* | The most common card reader is the \_\_\_\_\_\_\_ card reader which reads encoded information stored on a thin magnetic strip located on the back of the card.    **magnetic** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 57. *(p. 145)* | \_\_\_\_\_\_\_ tags are tiny chips that can be embedded into almost anything and contain information used to track and locate lost pets; to monitor production and update inventory; to record prices, product descriptions, and locations of retail items.    **RFID** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 58. *(p. 145)* | Character and \_\_\_\_\_\_\_ recognition devices are scanners that are able to recognize special characters and marks.    **mark** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 59. *(p. 146)* | \_\_\_\_\_\_\_ are specialized digital video cameras that capture images.    **Webcams** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-05 Recognize image capturing and audio-input devices Topic: Imaging Capturing Devices* |

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| 60. *(p. 150)* | Digital \_\_\_\_\_\_\_ connect to computers and project computer output and can control the computer with the use of a special pen.    **whiteboards** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 61. *(p. 152)* | \_\_\_\_\_\_\_ printers use a technology similar to that used in a photocopy machine.    **Laser** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 62. *(p. 153)* | \_\_\_\_\_\_\_ printers are widely used with ATMs.    **Thermal** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 63. *(p. 153)* | \_\_\_\_\_\_\_ printers are printers connected to the Internet that provide printing services to others on the Internet.    **Cloud** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 64. *(p. 153)* | \_\_\_\_\_\_\_ are special-purpose printers typically found in architectural and engineering environments.    **Plotters** |

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| *AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-08 Define printing features and types including inkjet and cloud printers Topic: Printers* |

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| 65. *(p. 154)* | \_\_\_\_\_\_\_ telephones are specialized input and output devices for receiving and sending voice communication.    **Internet** |

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| *AACSB: Communication AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-10 Define combination input and output devices including multifunctional devices, Internet telephones, and VR headgear and gloves Topic: Combination Input and Output Devices* |

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| 66. *(p. 154)* | \_\_\_\_\_\_\_ combine the capabilities of a scanner, printer, fax, and copy machine.    **Multifunctional devices(MFDs)** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-10 Define combination input and output devices including multifunctional devices, Internet telephones, and VR headgear and gloves Topic: Combination Input and Output Devices* |

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| 67. *(p. 154)* | Voice over \_\_\_\_\_\_\_ is the transmission of telephone calls over computer networks.    **IP** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-10 Define combination input and output devices including multifunctional devices, Internet telephones, and VR headgear and gloves Topic: Combination Input and Output Devices* |

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| 68. *(p. 148)* | \_\_\_\_\_\_\_ pitch is the distance between pixels on a monitor.    **Dot** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 69. *(p. 148)* | \_\_\_\_\_\_\_ ratio indicates a monitor's ability to display colors by comparing the light intensity of the brightest white to the darkest black.    **Contrast** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 70. *(p. 148)* | \_\_\_\_\_\_\_ ratio indicates the proportional relationship between a display's width and height.    **Aspect** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 71. *(p. 158)* | \_\_\_\_\_\_\_ is any injury that is caused by fast, repetitive work that can generate neck, wrist, hand, and arm pain.    **Repetitive strain injury(RSI)** |

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| *AACSB: Technology Blooms: Remember Difficulty: 1 Easy Learning Outcome: 06-11 Explain ergonomics and ways to minimize physical damage Topic: Ergonomics* |

**Essay Questions**

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| 72. *(p. 158)* | Describe some recommendations to avoid health risks associated with computer use.     Computer users can alleviate problems by taking frequent rest breaks and by using well-designed computer furniture. To make the computer easier on the eyes, take a 15-minute break every hour or two. To help avoid back and neck problems, make sure your equipment is adjustable. Use ergonomically correct keyboards to help prevent injury from heavy computer use. |

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| *AACSB: Reflective Thinking AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-11 Explain ergonomics and ways to minimize physical damage Topic: Ergonomics* |

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| 73. *(p. 144)* | How does an optical scanner work?     Often called a scanner, an optical scanner scans image or text documents and converts them to machine-readable form. These devices do not recognize individual letters or images. Rather, they recognize light, dark, and colored areas that make up individual letters or images. Typically, scanned documents are saved in files that can be further processed, displayed, printed, or stored for later use. |

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| *AACSB: Reflective Thinking AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 74. *(p. 144-145)* | How does a bar code reader work?     Bar code readers are used extensively in almost all supermarkets. At the checkout counter, electronic cash registers use a bar code reader that contains photoelectric cells that scan each or read each product's bar code. The codes are sent to the supermarket's computer, which has a description, the latest price, and an inventory level for each product. The computer processes this input to update the inventory level and to provide the electronic cash register with the description and price for each product. |

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| *AACSB: Reflective Thinking AACSB: Technology Blooms: Apply Difficulty: 2 Medium Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 75. *(p. 145)* | What are character and mark recognition devices? Describe their uses.     Character and mark recognition devices are scanners that can recognize special characters and marks. Magnetic-ink character recognition (MICR) devices are used by banks to automatically read numbers on the bottom of checks and deposit slips. Optical-character recognition (OCR) uses special pre-printed characters that can be read by a light source and changed into machine-readable code. They are used in department stores to read retail price tags. Optical-mark recognition (OMR) senses the presence or absence of a mark, such as a pencil mark. OMR is often used to score standardized multiple-choice tests. |

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| *AACSB: Reflective Thinking AACSB: Technology Blooms: Apply Difficulty: 2 Medium Learning Outcome: 06-04 Describe scanning devices including optical scanners, RFID readers, and recognition devices Topic: Scanning Devices* |

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| 76. *(p. 146-147)* | How is voice recognition technology being used today?     Voice-recognition systems use a microphone, a sound card, and special software. These systems allow users to operate computers and other devices as well as to create documents using voice commands. Examples include voice-controlled dialing features on mobile phones, navigation on GPS devices, and control of car audio systems. Specialized portable devices are used by doctors, lawyers, and others to record dictation. |

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| *AACSB: Reflective Thinking AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-05 Recognize image capturing and audio-input devices Topic: Audio-Input Devices* |

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| 77. *(p. 147-148)* | Describe the basic distinguishing features of monitors that affect clarity including resolution, dot pitch, contrast ratio, size, and aspect ratio.     Resolution is one of the most important features. Images are formed on a monitor by a series of dots or pixels (picture elements). Resolution is expressed as a matrix of these dots or pixels. For example, many monitors today have a resolution of 1,600 pixel columns by 1,200 pixel rows for a total of 1,920,000 pixels. The higher a monitor's resolution (the more pixels), the clearer the image produced. Dot (pixel) pitch is the distance between each pixel. Most monitors have a dot pitch of .31 mm (31/100th of a millimeter) or less. The lower the dot pitch (the shorter the distance between pixels), the clearer the images produced. Contrast ratios indicate a monitor's ability to display colors. It compares the light intensity of the brightest white to the darkest black. Good monitors typically have contrast ratios between 500:1 to 2000:1. Size, or active display area, is measured by the diagonal length of a monitor's viewing area. Common sizes are 15, 17, 19, 21, and 24 inches. Aspect ratio indicates the proportional relationship between a display's width and height. Almost all newer monitors have a 16:9 aspect ratio designed to display wide-screen content. |

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| *AACSB: Reflective Thinking AACSB: Technology Blooms: Apply Difficulty: 3 Hard Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 78. *(p. 150)* | What is HDTV? What is 3D HDTV?     High-definition television (HDTV) delivers a much clearer and more detailed wide-screen picture than regular television. Because the output is digital, users can readily freeze video sequences to create high-quality still images. The video and still images can then be digitized, edited, and stored on disk for later use. This technology is very useful to graphic artists, designers, and publishers. One of the most recent and dramatic advances is 3D HDTV. Using special viewing glasses, 3D HDTV provides theater-quality three-dimensional viewing. |

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| *AACSB: Reflective Thinking AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-07 Identify different monitor features and types including flat-panels and e-books Topic: Monitors* |

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| 79. *(p. 154)* | What is a multifunctional device? What are the advantages/disadvantages of such a device?     A multifunctional device (MFD) typically combines the capabilities of a scanner, printer, fax, and copy machine. They cost about the same as a good printer or copy machine but require much less space than the single-function devices they replace. Their disadvantage is that the quality and functionality are not quite as good as those of the separate single-purpose devices. The output quality for any one function is often not quite as good as that of the separate single-purpose devices. The reliability of multifunctional devices suffers because problems with one of the functional parts can make the entire device inoperable. |

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| *AACSB: Reflective Thinking AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-10 Define combination input and output devices including multifunctional devices, Internet telephones, and VR headgear and gloves Topic: Combination Input and Output Devices* |

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| 80. *(p. 154)* | What is VoIP and how does it work?     Voice over IP (VoIP) is a set of standards or technologies that support voice and other types of communication over the Internet. Telephony, also known as Internet telephony, is the VoIP application that uses the Internet rather than traditional telephone lines to support voice communication. To place telephone calls using Internet telephony requires a high-speed Internet connection and a service provider. Many cable service providers offer bundles including Internet, telephone, and television. While these bundles offer a price break, there are other lower-cost options for telephony from a variety of providers including PhonePower, Phone.com and Skype. |

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| *AACSB: Reflective Thinking AACSB: Technology Blooms: Understand Difficulty: 2 Medium Learning Outcome: 06-10 Define combination input and output devices including multifunctional devices, Internet telephones, and VR headgear and gloves Topic: Combination Input and Output Devices* |