Ethics for the Information Age
6th Edition

TEST BANK

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Multiple-choice Questions

For each of the following questions, choose the letter of the one *best* response.

Chapter 1

1. The two principal catalysts for the Information Age have been
   a) books and pamphlets.
   b) computers and communication networks.
   c) movie theaters and public parks.
   d) newspapers and magazines.
   e) the printing press and the telegraph.

2. Which statement best supports the conclusion that society **can** control whether to adopt a new technology?
   a) No new nuclear power plants were built in the United States for 25 years after the accident at Three Mile Island.
   b) About half of all email messages are spam.
   c) Despite decades of research, fusion power is an elusive goal.
   d) People do not have to listen to Rush Limbaugh if they do not want to.
   e) Some new technologies are simply too expensive to even consider adopting.

3. Tablets, abacuses, and manual tables
   a) are no longer used, because of the proliferation of calculators and computers.
   b) are examples of aids to manual calculating.
   c) were developed in Western Europe in the late Middle Ages.
   d) replaced Hindu-Arabic numerals as the preferred way to do calculations.
   e) All of the above.

4. The mechanical adding machines of Pascal and Leibniz were not widely adopted because
   a) they were too expensive.
   b) there were unreliable.
   c) they were too difficult to program.
   d) they could not handle fractions.
   e) bookkeepers successfully lobbied the King, and he made the machines illegal.

5. The calculating machine of Georg and Edvard Sheutz
   a) computed the values of polynomial functions.
   b) typeset the results of its computations.
   c) performed calculations faster than they could be done manually.
   d) performed calculations more reliably than they could be done manually.
   e) All of the above.

6. Which of the following phrases does **not** describe the Gilded Age in America?
    a) rapid industrialization
    b) economic expansion
    c) widespread electrification
    d) concentration of corporate power
    e) corporate mergers

7. Which of the following was **not** a result of the adoption of mechanical calculators?
    a) Less demand for "superstars" who could rapidly compute sums by hand
    b) Higher productivity of bookkeepers
    c) Higher salaries of bookkeepers
    d) Proliferation of companies making calculators
    e) Feminization of bookkeeping

8. Which of the following was **not** a feature of cash registers in the early 1900s?
    a) Ability to compute total of purchases
    b) Ability to print itemized receipts for customers
    c) Ability to print log of transactions for owners
    d) Ability to compute amount of change to give customer
    e) Ability to ring a bell every time cash drawer is opened

9. Punched card tabulation was invented by Herman Hollerith, an employee of
    a) the Pennsylvania Railroad.
    b) the Census Bureau.
    c) the Pennsylvania Steel Company.
    d) the Burroughs Adding Machine Company.
    e) IBM.

10. Which of the following phrases best describes a system that inputs data, performs one or more calculations, and produces output data?
    a) manual calculator
    b) digital computer
    c) data-processing system
    d) difference engine
    e) cash register

11. The first commercial electronic digital computers were produced just after
    a) the Spanish-American War.
    b) World War I.
    c) World War II.
    d) the Korean War.
    e) the Vietnam War.

12. Programming languages were developed in order to
    a) make it possible to program computers in English.
    b) make programming faster and less error-prone.
    c) speed translations between English and Russian during the Cold War.
    d) improve the computation speed of computers, which were very expensive.
    e) All of the above.

13. Which of the following was not an early programming language?
    a) BASIC
    b) COBOL
    c) DATA-FLOW
    d) FLOW-MATIC
    e) FORTRAN

14. Software that allows multiple users to edit and run their programs simultaneously on the same computer is called
    a) a data-processing system.
    b) an intranet.
    c) a microprocessor.
    d) a programming language.
    e) a time-sharing system..

15. A semiconductor device containing transistors, capacitors, and resistors is called
    a) a difference engine.
    b) a diode.
    c) an integrated circuit.
    d) a radio.
    e) a transformer.

16. Which Cold War program played an important role in advancing integrated circuit technology?
    a) B-52 bomber
    b) Hydrogen bomb
    c) Mark 37 torpedo
    d) Minuteman II ballistic missile
    e) NORAD radar network

17. Which company produced the System/360, a family of 19 compatible mainframe computers?
    a) Fujitsu
    b) Hewlett-Packard
    c) IBM
    d) Intel
    e) Texas Instruments

18. The company that invented the microprocessor is
    a) Fujitsu
    b) Hewlett-Packard
    c) IBM
    d) Intel
    e) Texas Instruments

19. Which of the following was **not** an activity of the People's Computer Company, a not-for-profit corporation in the San Francisco area?
    a) Publishing a newspaper containing the source code to programs
    b) Allowing people to rent time on a time-shared computer
    c) Hosting Friday-evening game-playing sessions
    d) Promoting a culture in which computer enthusiasts freely shared software
    e) Developing the world's first graphical user interface

20. Who wrote "An Open Letter to Hobbyists," complaining about software theft?
    a) Stewart Brand
    b) Bob Frankston
    c) Bill Gates
    d) Steve Jobs
    e) Steve Wozniak

21. A key application that first made personal computers more attractive to business was
    a) the spreadsheet program.
    b) the World Wide Web.
    c) desktop publishing.
    d) video editing.
    e) email.

22. The software company that provided IBM with the operating system for its PC was
    a) Apple.
    b) Boeing.
    c) Microsoft.
    d) Novell.
    e) Tandy.

23. The first electronic networking technology widely used in the United States was the
    a) Internet.
    b) radio.
    c) telegraph.
    d) telephone.
    e) television.

24. The Pony Express went out of business when
    a) the Mexican War ended in 1846.
    b) the Civil War began in 1861.
    c) the transcontinental telegraph was completed.
    d) AT&T completed the national telephone network.
    e) the radio was invented.

25. Alexander Graham Bell invented the harmonic or musical telegraph, which enabled
    a) more than one message to be sent over a single telegraph wire at the same time.
    b) human speech to be sent over a telegraph wire.
    c) music to be send over a telegraph wire.
    d) B and C
    e) None of the above.

26. Nearly all early telephones were installed in businesses, because
    a) people were afraid that telephones were dangerous.
    b) people thought that the government was using telephones as eavesdropping devices.
    c) only men were allowed to use a telephone.
    d) most homes did not have electricity.
    e) leasing a telephone was expensive.

27. A typewriter that prints a message transmitted over a telegraph line is called a
    a) computer.
    b) monitor.
    c) teletype.
    d) terminal.
    e) transponder.

28. Guglielmo Marconi originally conceived of the radio as a way to
    a) transmit telegraph messages without wires.
    b) transmit electricity without wires.
    c) transmit votes in national elections.
    d) transmit light without wires.
    e) All of the above

29. The power of radio as a medium of mass communication was demonstrated in 1938 when Orson Welles put on a dramatization of
    a) *War of the Worlds*.
    b) *Hamlet*.
    c) Homer's *Odyssey*.
    d) the assassination of Franklin Roosevelt.
    e) *20,000 Leagues Under the Sea*.

30. ARPA Director J.C.R. Licklider conceived of a Galactic Network that would
    a) control weapons from space.
    b) guide spacecraft to distant planets.
    c) become the world's most powerful number-crunching machine.
    d) facilitate the exchange of programs and data.
    e) All of the above

31. One of the first and most important applications of the ARPANET was
    a) email.
    b) voice mail.
    c) spreading computer viruses.
    d) disseminating anti-Communist propaganda to American citizens.
    e) stealing secrets from the Soviet Union.

32. What term is used to describe a high-speed Internet connection?
    a) broadband
    b) hypertext
    c) Internet2
    d) the Matrix
    e) World Wide Web

33. Which country has the fastest broadband connections on average?
    a) China
    b) Germany
    c) India
    d) South Korea
    e) United States

34. A common name for a wireless Internet access point is
    a) broadband hub.
    b) hotspot.
    c) Internet access-ory.
    d) Internet café.
    e) wap.

35. The first alphabet to represent vowels as well as consonants was developed by the
    a) Babylonians.
    b) Egyptians.
    c) Greeks.
    d) Romans.
    e) Syrians.

36. In the fourth century the codex replaced the scroll because
    a) it was more durable, and it was much easier to look up a particular passage.
    b) it was much lighter, and it could be made much more rapidly.
    c) Gutenberg's printing press had just been invented.
    d) there was a worldwide shortage of papyrus.
    e) All of the above

37. Hypertext is supposed to mimic
    a) the associative memory of human beings.
    b) the way that creeks flow into streams and streams merge into rivers.
    c) constellations in the night sky.
    d) road networks.
    e) the way that some people "channel surf" with a remote control.

38. What visionary invented the computer mouse and demonstrated windows, email, and live network videoconferencing at "the mother of all demos" in 1968?
    a) Vannevar Bush
    b) Douglas Engelbart
    c) Al Gore
    d) Alan Kay
    e) Ted Nelson

39. The first popular personal computer with a graphical user interface was the
    a) Apple Macintosh.
    b) Compaq Presario.
    c) IBM PC.
    d) NeXT workstation.
    e) Tandy TRS-80.

40. The World Wide Web is the creation of
    a) Tim Berners-Lee.
    b) Vannevar Bush.
    c) Douglas Engelbart.
    d) Alan Kay.
    e) Ted Nelson.

41. A Web browser enables you to
    a) view Web pages.
    b) edit Web pages.
    c) create Web pages.
    d) delete Web pages.
    e) All of the above

42. What is the name of a program that follows hyperlinks, collecting information about Web sites?
    a) daemon
    b) hacker
    c) spider
    d) trawler
    e) worm

Chapter 2

43. According to James Moor, taking "the ethical point of view" means
    a) abiding by your religious beliefs.
    b) deciding that other people and their core values are worthy of your respect.
    c) choosing to sacrifice your own good for the good of someone else.
    d) putting self-interest above the interests of everyone else.
    e) refusing to accept help from other people.

44. An association of people organized under a system of rules designed to advance the good of its members over time is called a
    a) business.
    b) constitution.
    c) government.
    d) monopoly.
    e) society.

45. Rules of conduct describing what people ought and ought not to do in various situations are called
    a) denominations.
    b) ideals.
    c) morality.
    d) philosophy.
    e) virtues.

46. Ethics is
    a) a rational examination of people's moral beliefs.
    b) a branch of philosophy.
    c) one way to determine which activities are "good" and which are "bad."
    d) a field of study more than 2,000 years old.
    e) All of the above

47. A relativist claims that
    a) there are no universal moral principles.
    b) morality has an existence outside the human mind.
    c) morality and law are identical.
    d) there is no such thing as free will.
    e) God does not exist.

48. Objectivism is based on the idea that
    a) there are no universal moral principles.
    b) morality has an existence outside the human mind.
    c) morality and law are identical.
    d) there is no such thing as free will.
    e) God does not exist.

49. The divine command theory is an example of
    a) relativism.
    b) objectivism.
    c) egoism.
    d) existentialism.
    e) materialism.

50. Which of the following is an argument in favor of the divine command theory?
    a) The divine command theory is not based on reason.
    b) It is fallacious to equate "the good" with "God."
    c) God is all-knowing.
    d) Some moral problems are not addressed directly in scripture.
    e) The Bible has contradictory moral teachings.

51. Ethical egoism is
    a) not based on reason or logic.
    b) based on determining long-term beneficial consequences.
    c) the divine command theory by another name.
    d) Kantianism by another name.
    e) utilitarianism by another name.

52. Which of the following is an argument in favor of ethical egoism?
    a) Ethical egoism is supported by verses in the Bible.
    b) People are naturally altruistic.
    c) The community can benefit when individuals put their well-being first.
    d) It is not true that people naturally act in their own long-term self-interest.
    e) Ethical egoism treats all persons as moral equals.

53. According to Kant, our sense of "ought to" is called
    a) necessity.
    b) insecurity.
    c) paranoia.
    d) love.
    e) dutifulness.

54. According to Kant, the moral value of an action depends upon
    a) its consequences.
    b) the underlying moral rule.
    c) how closely it aligns with Biblical teachings.
    d) how closely it aligns with the law.
    e) the extent to which it produces happiness.

55. According to the second formulation of the Categorical Imperative,
    a) the moral worth of a person depends upon that person's actions.
    b) one good turn deserves another.
    c) bad deeds should be punished.
    d) it is wrong for one person to "use" another.
    e) the moral worth of a person depends upon that person's intentions.

56. The Principle of Utility is also called
    a) the Categorical Imperative.
    b) the Difference Principle.
    c) the Greatest Happiness Principle.
    d) the Social Contract.
    e) the Ten Commandments.

57. Two philosophers closely associated with utilitarianism are
    a) Jeremy Bentham and John Stuart Mill.
    b) Immanuel Kant and Jeremy Bentham.
    c) Immanuel Kant and John Stuart Mill.
    d) John Stuart Mill and John Rawls.
    e) Jean-Jacques Rousseau and John Rawls.

58. Utilitarianism is an example of
    a) a consequentialist theory.
    b) the social contract theory.
    c) a non-consequentialist theory.
    d) a practical implementation of the divine command theory.
    e) a relativistic theory.

59. The problem of moral luck is raised as a criticism of
    a) the divine command theory.
    b) act utilitarianism.
    c) rule utilitarianism.
    d) cultural relativism.
    e) Kantianism.

60. Utilitarianism does not mean "the greatest good of the greatest number" because
    a) it is impossible to calculate "the greatest good."
    b) it focuses solely on "the greatest good" and pays no attention to how "the good" is distributed.
    c) some people have no moral worth.
    d) it is impossible to maximize "the good" without ruining the environment.
    e) All of the above

61. Thomas Hobbes called life without rules and a means of enforcing them
    a) utopia.
    b) anarchy.
    c) democracy.
    d) communism.
    e) the state of nature.

62. An early proponent of the social contract was
    a) Jeremy Bentham.
    b) John Stuart Mill.
    c) Jean-Jacque Rousseau.
    d) Karl Marx.
    e) John Brown.

63. A right that another can guarantee by leaving you alone to exercise the right is called a
    a) positive right.
    b) negative right.
    c) absolute right.
    d) limited right.
    e) proverbial right.

64. A right that is guaranteed without exception is called a
    a) positive right.
    b) negative right.
    c) absolute right.
    d) limited right.
    e) proverbial right.

65. The idea that social and economic inequalities must be to the greatest benefit of the least-advantaged members of society is called
    a) capitalism.
    b) communism.
    c) socialism.
    d) utilitarianism.
    e) the difference principle.

66. Modern writers often refer to moral virtues as
    a) intellectual virtues.
    b) philosophical virtues.
    c) psychological virtues.
    d) social virtues.
    e) virtues of character.

67. A character trait that prevents a human being from flourishing or become truly happy is called a
    a) fatal attraction.
    b) inverse virtue.
    c) negative virtue.
    d) tragic flaw.
    e) vice.

68. According to Aristotle, moral virtue results from
    a) a good education.
    b) living a long life.
    c) a happy marriage and loving family.
    d) repetition of the appropriate acts.
    e) All of the above.

69. According to Aristotle, deriving pleasure from a virtuous act is a sign that you
    a) have developed the virtue.
    b) have not yet developed the virtue.
    c) are egotistical.
    d) are hedonistic.
    e) have not done enough good deeds lately.

Chapter 3

70. The volume of spam is increasing because
    a) companies have found it to be effective.
    b) it is 100 times less expensive than a traditional flyer sent via the U.S. mail.
    c) some people respond to spam advertisements.
    d) All of the above
    e) None of the above

71. A Korean cybercafé where people play on-line, persistent games is called a
    a) coffee clubhouse.
    b) computer commons.
    c) PC bang.
    d) Tenretni (Internet spelled backwards).
    e) virtual reality theater.

72. A wiki is
    a) An online encyclopedia.
    b) A personal journal kept on the Web.
    c) An electronic profile constructed automatically by a Web browser.
    d) A piece of software that allows ISPs to monitor who visits which Web sites.
    e) A Web site that allows multiple people to contribute and edit its content.

73. A blog is
    a) a character in Lineage, a popular on-line game.
    b) a personal journal kept on the Web.
    c) a person who assumes a false identity in a chat room.
    d) a special symbol visible on displays that show Unicode characters.
    e) the Web version of a "couch potato."

74. Many people are now using the Web not simply to download content, but to build communities and upload and share content they have created. This trend has been given the name
    a) Persistent online reality
    b) Online networking
    c) Web 2.0
    d) Interactive hypermedia
    e) Virtual reality

75. Which of these is **not** an example of direct censorship?
    a) government monopolization
    b) self-censorship
    c) pre-publication review
    d) licensing and registration
    e) All of the above are examples of direct censorship.

76. According to John Stuart Mill's Principle of Harm, the only ground on which the government should intervene in the conduct of an individual is when
    a) the individual is breaking the law.
    b) it would clearly be to the benefit of the individual.
    c) the individual is under 18 or over 65.
    d) it would prevent harm to others.
    e) According to Mill, the government should intervene if any of the above conditions are true.

77. In the United States, freedom of expression
    a) is a positive right.
    b) is not an absolute right.
    c) is limited to political speech.
    d) has been abolished by decisions of the U.S. Supreme Court.
    e) is guaranteed by the Fourth Amendment to the U.S. Constitution.

78. A Web filter is a piece of software that
    a) keeps track of the pages your Web browser displays.
    b) sends Google information about your Web surfing habits.
    c) prevents certain Web pages from being displayed by your browser.
    d) prevents unauthorized people from using your computer to surf the Web.
    e) A and B.

79. Which of the following laws was upheld as constitutional by the U.S. Supreme Court?
    a) Communications Decency Act
    b) Child Online Protection Act
    c) Child Internet Protection Act
    d) All of these laws were upheld as constitutional by the U.S. Supreme Court.
    e) None of these laws were upheld as constitutional by the U.S. Supreme Court.

80. Sexting refers to
    a) sending text messages with nude or nearly nude photographs.
    b) sending emails with nude or nearly nude photographs.
    c) posting nude or nearly nude photographs to a Web site.
    d) A and B.
    e) A, B, and C.

81. Sexting is causing a legal crisis because
    a) police and prosecutors refuse to get involved in sexting cases.
    b) police and prosecutors are treating sexting as a felony offense.
    c) prisons are starting to fill up with people convicted of sexting.
    d) police have been charged with possession of child pornography.
    e) B and C.

82. How many Americans are victims of identity theft each year?
    a) About 10,000.
    b) About 100,000.
    c) About 1 million.
    d) About 10 million.
    e) About 100 million.

83. Cyberbullying is defined as inflicting psychological harm on another person using
    a) the phone system.
    b) the Internet.
    c) broadcast media such as radio or television.
    d) A and B.
    e) A, B, and C.

84. Kimberly Young's test for Internet addiction is based on the diagnosis of
    a) pathological gambling.
    b) obsessive/compulsive behavior.
    c) chronic sleeplessness.
    d) anxiety disorders.
    e) schizophrenia.

85. The Enlightenment view of addiction is that
    a) there is nothing wrong with addiction.
    b) addiction is not real.
    c) addiction can never be overcome by will-power alone.
    d) society is responsible for the bad choices people make.
    e) people are responsible for the choices they make.

Chapter 4

86. Which philosopher argued in *The Second Treatise of Government* that people have a natural right to property?
    a) Jeremy Bentham
    b) Immanuel Kant
    c) John Locke
    d) John Stuart Mill
    e) Jean-Jacques Rousseau

87. Intellectual property is a unique product of the human intellect that
    a) has commercial value.
    b) can be reproduced digitally.
    c) has been produced on paper.
    d) can be performed in public.
    e) cannot be understood by anyone other than the creator.

88. The value of intellectual property is recognized
    a) in the Constitution of the United States.
    b) in the free market.
    c) in legislation passed by the U.S. Congress.
    d) through court decisions.
    e) All of the above

89. The proper noun "Kleenex" is protected
    a) as a trade secret.
    b) with a trademark.
    c) with a patent.
    d) with a copyright.
    e) All of the above

90. Which of the following rights is **not** a right of a copyright holder?
    a) The right to reproduce the copyrighted work.
    b) The right to distribute the work to the public.
    c) The right to perform the work in public.
    d) The right to prevent others from producing competitive works.
    e) The right to produce new works derived from the copyrighted work.

91. Since the first Copyright Act was passed in 1790
    a) Congress has repeatedly increased the number of years of copyright protection.
    b) Congress has made more kinds of intellectual property protected under copyright.
    c) Congress has attempted to reconcile American copyright law with European copyright law.
    d) All of the above
    e) None of the above

92. Sometimes it is legal to reproduce a copyrighted work without the permission of the copyright holder. These circumstances are called
    a) fair use.
    b) noncommercial use.
    c) piracy.
    d) public domain.
    e) reciprocity.

93. The Audio Home Recording Act of 1992
    a) protects the right of consumers to make backup copies of CDs.
    b) requires manufacturers of digital audio records to incorporate the Serial Copyright Management System.
    c) requires manufacturers of digital audio recording devices and blank digital media to pay a royalty to songwriters and music publishers.
    d) All of the above
    e) None of the above

94. The U.S. Supreme Court decision in *Sony v. Universal City Studios* established the concept of
    a) fair use.
    b) intellectual property protection for movies.
    c) licensing fees for videotapes.
    d) space shifting.
    e) time shifting.

95. The decision by the U.S. Court of Appeals, Ninth Circuit in *RIAA v. Diamond Multimedia Systems Inc.* established the concept of
    a) fair use.
    b) intellectual property protection for movies.
    c) licensing fees for videotapes.
    d) space shifting.
    e) time shifting.

96. The decision by the U.S. Court of Appeals, Ninth Circuit in *Kelly v. Arriba Soft Corporation* established that the display of thumbnail images by a search engine
    a) is a fair use of those images.
    b) is not a fair use of those images.
    c) is an unfair use of network bandwidth.
    d) is an illegal attempt to circumvent Web filters.
    e) is legal, even when the original images are pornographic.

97. Google Books is
    a) an effort to scan millions of books and make all their words searchable.
    b) an effort to gain copyrights on millions of books in the public domain.
    c) a book reader designed to compete with the Kindle.
    d) an online store competing with Amazon.com.
    e) None of the above

98. In 2005 Sony BMG Music Entertainment made headlines by
    a) purchasing the publishing rights to the Beatles' songs from Michael Jackson.
    b) purchasing the iTunes Store from Apple.
    c) announcing they would begin shipping CDs without digital rights management.
    d) shipping CDs that would only play on devices manufactured by Sony.
    e) shipping CDs that secretly installed a rootkit on Windows computers.

99. After the RIAA sued Napster,
    a) the Supreme Court ruled in favor of Napster.
    b) Congress passed the Digital Millennium Copyright Act that legalized file sharing.
    c) Congress made peer-to-peer networks illegal.
    d) Napster renamed itself KaZaA.
    e) Napster went off-line.

100. Suppose you buy a Microsoft game at the bookstore. Under current U.S. law, which of the following actions is illegal?
    a) Copying it onto a CD to give or sell to someone else
    b) Preloading it onto the hard disk of a computer being sold
    c) Distributing it over the Internet
    d) All of the above are illegal
    e) None of the above is illegal

101. The Digital Millennium Copyright Act is controversial, in part, because
    a) it extends the length of time that a piece of intellectual property is protected by copyright.
    b) it makes it illegal for consumers to circumvent encryption placed on digital media.
    c) it extends copyright protection to music broadcast over the Internet.
    d) it increases penalties for on-line services providers whose customers are misusing copyrighted materials.
    e) All of the above

102. Apple's digital rights management system called FairPlay prevented
    a) songs from being played on more than five computers.
    b) songs from being copied onto CDs more than seven times.
    c) music purchased from the iTunes Store from playing on non-Apple MP3 players.
    d) All of the above
    e) None of the above

103. Compared with other peer-to-peer networks, BitTorrent takes advantage of the fact that broadband Internet connections
    a) continue to drop in price.
    b) are immune from surveillance by the police.
    c) provide higher speeds for downloading than for uploading.
    d) have become the standard in most homes in the United States.
    e) All of the above.

104. The court's ruling in *Apple Computer v. Franklin Computer Corp.* established that
    a) computer hardware can be patented.
    b) computer software can be copyrighted.
    c) object programs can be copyrighted.
    d) the "look and feel" of a computer program can be patented.
    e) Apple Computer could not patent its desktop icons.

105. The Linux operating system is an example of
    a) free-market software.
    b) open-source software.
    c) pirated software.
    d) proprietary software.
    e) unreliable software.

Chapter 5

106. The Third Amendment to the U.S. Constitution has to do with
    a) freedom of speech and religion.
    b) search warrants.
    c) the right to bear arms.
    d) quartering of soldiers in private homes.
    e) self-incrimination.

107. Who wrote an influential paper in the 1890s urging that privacy rights be enacted into law?
    a) Benn and Brandeis
    b) Benn and Thomson
    c) Levine and Benn
    d) Thomson and Warren
    e) Warren and Brandeis

108. Who wrote that every violation of a "privacy right" is also a violation of another right?
    a) Stanley Benn
    b) Louis Brandeis
    c) Morton Levine
    d) Judith Jarvis Thomson
    e) Samuel Warren

109. Most commentators cite the benefits of privacy as a reason why people ought to have some privacy rights. A right that benefits society is called a
    a) Constitutional right.
    b) legal right.
    c) natural right.
    d) prudential right.
    e) social right.

110. A public record contains information about an incident or action reported to a government agency for the purpose of
    a) enhancing public safety.
    b) informing the public.
    c) protecting the innocent.
    d) regulating the economy.
    e) upholding the law.

111. An example of a public record is
    a) a birth certificate.
    b) a marriage license.
    c) a deed to a house.
    d) a record of a criminal conviction.
    e) All of the above

112. An RFID is
    a) a magnetic bar code.
    b) a microscopic bar code.
    c) a wireless transmitter.
    d) a biometric identification device.
    e) a random field interferometry device.

113. The OnStar system allows
    a) a vehicle owner to initiate a conversation with an OnStar representative.
    b) the vehicle to automatically send a message to an OnStar representative after an accident.
    c) an OnStar representative to disable the gas pedal of the vehicle without the driver's permission.
    d) a and b
    e) a, b, and c

114. Flash cookies are controversial, in part, because
    a) they are commonly used by identify thieves to steal credit card numbers.
    b) they consume huge amounts of hard disk space.
    c) they allow online retailers such as Amazon.com to track online shopping on other Web sites.
    d) they are not controlled by the privacy controls of most Web browsers.
    e) All of the above

115. The process of searching through many records in one or more databases looking for patterns or relationships is called
    a) credit reporting.
    b) data mining.
    c) information gathering.
    d) microtargeting.
    e) pattern matching.

116. When information is put to another purpose, that is called a
    a) backdoor exploit.
    b) collaborative filter.
    c) cookie.
    d) data leveraging opportunity.
    e) secondary use of the data.

117. A policy that requires the consumer to explicitly give permission before an organization can share information with another organization is called
    a) fair use.
    b) full disclosure.
    c) nondisclosure.
    d) opt-in.
    e) opt-out.

118. The practice of mailing advertisements only to the most likely prospects is called
    a) discriminatory mailing.
    b) focused mailing.
    c) mail list trimming..
    d) predatory mailing.
    e) targeted direct mail.

Chapter 6

119. Which of the following is **not** one of the categories in Daniel Solove's taxonomy of privacy?
    a) information collection.
    b) information dissemination.
    c) information filtering.
    d) information processing.
    e) invasion.

120. According to the Employee Polygraph Protection Act, which organization(s) cannot administer lie detector tests to job applicants?
    a) private employers
    b) local governments
    c) state governments
    d) federal government
    e) All of the above

121. The Children's Online Privacy Protection Act
    a) makes it illegal for an online service to request a credit card number from a child 17 years old and younger.
    b) requires online services to create aliases for all customers who are 17 years old and younger.
    c) makes it illegal for children 12 years and younger to participate in chat rooms.
    d) requires online services to obtain parental consent before collecting any information from children 12 years old and younger.
    e) All of the above

122. The Genetic Information Nondiscrimination Act
    a) applies to all private employers, but not state or federal agencies.
    b) prohibits most employers from taking genetic information into account when making hiring, firing, promotion, or other employment-related decisions.
    c) ensures a life insurance company cannot take genetic information into account when making a decision about underwriting a policy.
    d) All of the above.
    e) None of the above.

123. The Census Bureau has not always kept confidential the information it has collected. According to the textbook, this became apparent
    a) during the Civil War.
    b) after the attack on Pearl Harbor.
    c) during the Vietnam War.
    d) during the first Gulf War.
    e) after September 11, 2001.

124. The FBI's National Crime Information Center database
    a) contains more than 39 million records.
    b) has information about every American citizen.
    c) has never led to a false arrest.
    d) is updated only once a week to give the FBI time to check the accuracy of the data.
    e) All of the above

125. The OneDOJ database
    a) is a new, national database that consolidates records from federal, state, and local law enforcement agencies.
    b) will give state and local police officers access to information provided by five federal law enforcement agencies.
    c) combines records from all U.S. governmental agencies into a single database that can be used by data mining by the FBI.
    d) received the endorsement of the ACLU for its innovative privacy-protection measures.
    e) is the first database created by the U.S. government that completely implements the Code of Fair Information Practices.

126. The Fourth Amendment to the U.S. Constitution has to do with
    a) freedom of speech and religion.
    b) search warrants.
    c) the right to bear arms.
    d) quartering of soldiers in private homes.
    e) self-incrimination.

127. After Congress ruled that wiretapping was illegal
    a) the FBI ceased all wiretapping activity.
    b) the FBI continued wiretapping people secretly.
    c) the FBI convinced Congress to grant it an exemption from the ban.
    d) the FBI began wiretapping every member of Congress.
    e) the CIA took over the job of wiretapping U.S. citizens.

128. What was the original purpose of Operation Shamrock?
    a) Intercept all international telegrams entering or leaving the United States
    b) Wiretap all calls made from public telephone booths
    c) Scan email messages to identify drug dealers
    d) Read all letters going between the United States and Ireland
    e) Identify Irish-Americans raising money for the IRA

129. Which of the following laws does not provide some sort of authorization for governmental wiretapping?
    a) Title III of the Omnibus Crime Control and Safe Streets Act
    b) Electronic Communications Privacy Act
    c) Federal Communications Act
    d) Communications Assistance for Law Enforcement Act
    e) USA PATRIOT Act

130. After the terrorist attacks of September 11, 2001, which U.S. governmental agency collected telephone call records of tens of millions of Americans without a court order?
    a) Central Intelligence Agency
    b) Department of Homeland Security
    c) Federal Bureau of Investigation
    d) Federal Communications Commission
    e) National Security Agency

131. According to records leaked to the *Guardian* newspaper, which of the following kinds of information were **not** released by Verizon to the National Security Agency?
    a) Date of the telephone call
    b) Duration of the telephone call
    c) Location of the telephone making the call
    d) Recording of the conversation
    e) Time of the telephone call

132. Which of the following precepts is *not* part of the Code of Fair Information Practices?
    a) There must be no personal data record-keeping systems whose very existence is secret.
    b) There must be a way for a person to find out what information about the person is in a record and how it is used.
    c) There must be a way for a person to correct or amend a record of identifiable information about the person.
    d) There must be a way for a person to collect damages for financial losses caused by incorrect information about that person stored in a data record-keeping system.
    e) There must be a way for a person to prevent information obtained for one purpose being used or made available for other purposes without the person's consent.

133. The Fair Credit Reporting Act
    a) gives consumers the right to request a free copy of their credit report every year.
    b) ensures that information about criminal convictions does not haunt a consumer's credit report forever.
    c) is designed to promote the accuracy of credit reports.
    d) makes it possible for a consumer to declare bankruptcy without harming his or her credit rating.
    e) All of the above

134. The Fair and Accurate Credit Transactions Act
    a) gives consumers the right to request a free copy of their credit report every year.
    b) allows credit bureaus to sell personal financial information they have gathered.
    c) makes it possible for a consumer to declare bankruptcy without harming his or her credit rating.
    d) ensures that people with criminal convictions are still able to obtain credit.
    e) All of the above
    f)

135. The Financial Services Modernization Act
    a) allows banks to offer insurance and stock brokerage services.
    b) requires banks to disclose their privacy policies to consumers.
    c) requires banks to inform consumers how they can "opt out" of having their confidential information released to other companies.
    d) Requires banks to develop policies that will prevent unauthorized access of customers' confidential information.
    e) All of the above

136. The Family Education Rights and Privacy Act
    a) gives students 18 years of age and older the right to review their educational records.
    b) gives students 18 years of age and older the right to request corrections to errors in their educational records.
    c) gives students 18 years of age and older the right to prevent educational records from being released without their permission, except under certain circumstances.
    d) All of the above
    e) None of the above

137. The Video Privacy Protection Act
    a) prohibits video stores from disclosing rental records without the written consent of the customer.
    b) prohibits DVD manufacturers from installing software that sends reports over the Internet every time a DVD is played.
    c) makes it legal to send "adult" DVDs through the mail without a warning label on the envelope.
    d) prohibits the government from prosecuting minors who play "adult" DVDs in their own home.
    e) All of the above

138. The Health Insurance Portability and Accountability Act
    a) ensures that a consumer can keep the same health care provider even when he or she changes employers.
    b) attempts to limit the exchange of information among health care providers to that information necessary to care for the patient.
    c) ensures that a consumer can sue doctors and hospitals for medical malpractice.
    d) ensures that doctors and hospitals can counter sue patients who file frivolous medical malpractice claims.
    e) All of the above

Chapter 7

139. A piece of self-replicating code embedded within another program is called a
    a) hack.
    b) rogue.
    c) Trojan horse.
    d) virus.
    e) worm.

140. A self-contained program that spreads through a computer network by exploiting security holes is called a
    a) hack.
    b) rogue.
    c) Trojan horse.
    d) virus.
    e) worm.

141. A program with a benign capability that conceals another, sinister purpose is called a
    a) hack.
    b) rogue.
    c) Trojan horse.
    d) virus.
    e) worm.

142. You may find a virus
    a) on a hard disk.
    b) on a floppy disk.
    c) on a CD-ROM.
    d) in an email attachment.
    e) All of the above

143. The Conficker worm is notable because
    a) it is Cuba's first attempt at cyberwarfare.
    b) it is the fastest spreading worm of all time.
    c) it shut down the White House Web site for three days.
    d) computer experts have found it particularly difficult to eradicate.
    e) All of the above.

144. The Internet worm was released by
    a) John Barlow.
    b) Katie Hafner.
    c) John Markoff.
    d) Robert Morris, Jr..
    e) Bruce Sterling.

145. A software program that responds to commands sent by a command-and-control program located on an external computer is called a
    a) bot.
    b) spoof.
    c) vampire.
    d) virus.
    e) worm.

146. Manipulating someone within an organization to gain access to confidential information is called
    a) diving.
    b) hacking.
    c) phreaking.
    d) social engineering.
    e) trashing.

147. An intentional action designed to prevent legitimate users from making use of a computer service is called
    a) a bombing run.
    b) a curtain closer.
    c) a denial-of-service attack.
    d) an electronic overdose.
    e) phreaking.

148. The process of determining that a user has permission to perform a particular action on a computer is called
    a) accountability.
    b) authentication.
    c) authorization.
    d) debugging.
    e) social engineering.

149. Determining that a person is who he or she claims to be on a computer is called
    a) accountability.
    b) authentication.
    c) authorization.
    d) debugging.
    e) social engineering.

150. Anonymous is
    a) an activist group that promotes the interests of the Recording Industry Association of America.
    b) a loosely organized group of hacktivists that claimed responsibility for a DDoS attack on Church of Scientology Web sites.
    c) the name given to the People's Liberation Army group that was responsible for more than 100 intrusions around the world.
    d) the name of the group that launched the Stuxnet worm.
    e) All of the above except c.

Chapter 8

151. Which of these statements about the National Crime Information Center (NCIC) is true?
    a) The NCIC databases contain about 40 million records.
    b) Improper use of the NCIC has led to about 1 million false arrests.
    c) Local law enforcement agencies enter 99 percent of the information that is in the NCIC databases.
    d) The Department of Homeland Security is in charge of the NCIC.
    e) All of these statements are true.

152. A computer used as a component of a larger system is called
    a) an embedded system.
    b) a mainframe computer.
    c) a network.
    d) an operating system.
    e) a personal computer .

153. Computers that process data from sensors as events occur are called
    a) distributed computers.
    b) event-driven simulations.
    c) pseudo-sensory systems.
    d) real-time systems.
    e) time-activated systems.

154. The Patriot missile system
    a) was designed to shoot down airplanes.
    b) failed to shoot down a Scud missile that killed 28 U.S. soldiers in the Gulf War.
    c) failed because it had been left running too long.
    d) failed because of a computer error.
    e) All of the above

155. The Ariane 5 satellite launch vehicle failed because
    a) a faulty on-board computer caused the other computers in the network to crash repeatedly.
    b) a bad sensor fed faulty information into the flight control computer, causing it to fail.
    c) the rocket's on-board computer sent back faulty information to ground control, causing the human controllers to destroy the rocket.
    d) code that worked correctly on the Ariane 4 failed on the Ariane 5.
    e) a software failure caused the rocket to self-destruct when in actuality the rocket's flight was going perfectly.

156. The AT&T long-distance network did not collapse entirely on January 15, 1990, because
    a) the U.S. Secret Service arrested the culprits before they could do any further damage.
    b) AT&T technicians rapidly fixed the software bug in the routing switches.
    c) MCI loaned some equipment to AT&T.
    d) the faulty computers shut themselves off before they could do any further damage.
    e) not all the routing switches had been converted to the latest software.

157. The Mars Climate Orbiter crashed on the surface of Mars because
    a) one program output thrust in terms of foot-pounds, and another program expected thrust to be expressed in terms of newtons.
    b) the probe lost contact with the Jet Propulsion Laboratory when it entered the Martian atmosphere.
    c) a bug in the computer program caused the vehicle to consume too much fuel on the way to Mars, leaving an inadequate supply for landing.
    d) the extreme cold of deep space caused the computer to crash.
    e) before programmers went on strike at subcontractor Lockheed Martin, one of them sabotaged the flight control software.

158. Which of these problems was **not** encountered by BAE as it tried to install an automated baggage handling system at Denver International Airport?
    a) The system misrouted luggage carts.
    b) The bar code printers didn't print tags clearly enough to be read by the scanners.
    c) Workers painted over electric eyes installed in the underground tunnels.
    d) The automated baggage handlers shredded some of the luggage.
    e) The system encountered all of these problems and more.

159. Mizuho Securities lost $225 million when
    a) hackers broke into its trading system and raided the accounts of 10,000 of its most important customers.
    b) a bug in its billing system caused it to send out improper invoices to 10,000 of its most important customers.
    c) a bug in its currency trading system caused it to sell yen and purchase dollars when it should have purchased yen and sold dollars.
    d) it tried unsuccessfully to automate the Tokyo Stock Exchange.
    e) one of its employees mistyped a sell order, and a bug in the Tokyo Stock Exchange trading program made it impossible to cancel the order.

160. Some computer experts have spoken out against the conversion to touch-screen voting machines because
    a) there is no evidence that there have been any problems with punched card systems.
    b) they are made in China, which does not even hold elections.
    c) a power failure could make it impossible for people to vote.
    d) they do not have a paper audit trail.
    e) All of the above

161. By making the PDP 11 minicomputer an integral part of the Therac-25, AECL was able to
    a) reduce costs by replacing hardware safety features with software safety features.
    b) increase the stock price of its subsidiary Digital Equipment Corporation.
    c) shrink the size of the machine considerably.
    d) eliminate the need for lead shielding.
    e) All of the above

162. Which mistake was **not** made by AECL, the manufacturer of the Therac-25?
   a) It did not include software or hardware devices to detect and report overdoses.
   b) It did not tell other hospitals about possible overdose incidents.
   c) It reused code without proper testing.
   d) It continued to sell the Therac-25 after the FDA declared it to be defective.
   e) AECL made all of these mistakes, and more.

163. Computer simulations can
   a) accurately predict the weather a month in advance.
   b) save automobile manufacturers time and money as they develop new cars.
   c) prove our planet is overpopulated.
   d) All of the above
   e) None of the above

164. The process of determining if a model is an accurate representation of the real system is called
   a) the null hypothesis.
   b) software engineering.
   c) synthesis.
   d) validation.
   e) verification.

165. The discipline focused on the production of software, as well as the development of tools, methodologies, and theories supporting software production, is most accurately called
   a) artificial intelligence.
   b) computer engineering.
   c) computer science.
   d) software simulation.
   e) software engineering.

Chapter 9

166. According to the textbook, which of the following careers is **not** an example of a mature profession?
   a) accountant
   b) doctor
   c) dentist
   d) lawyer
   e) software engineer

167. Which of the following is **not** one of the characteristics of a mature profession?
   a) code of ethics
   b) licensing
   c) mandatory drug testing
   d) mandatory professional development
   e) professional education

168. The process giving someone the legal right to practice a profession is called
    a) certification.
    b) licensing.
    c) matriculation.
    d) professional ethics.
    e) professional development.

169. Unlike most professionals, the typical software engineer
    a) does not have a college education.
    b) does not make important decisions.
    c) does not make more than minimum wage.
    d) does not work directly with individual clients.
    e) All of the above

170. The Software Engineering Code of Ethics and Professional Practice was developed by
    a) Computer Professionals for Social Responsibility.
    b) the Association for Computing Machinery and the Institute for Electrical and Electronics Engineers.
    c) a consortium of computer science departments in the United States, Canada, and Mexico.
    d) Immanuel Kant.
    e) John Rawls.

171. The Principles and Clauses in the Software Engineering Code of Ethics and Professional Practice
    a) address every ethical dilemma a software engineer may face.
    b) provide algebraic formulas for determining the best course of action.
    c) incorporate every relevant feature into the formulas.
    d) All of the above
    e) None of the above

172. Whistle-blowers
    a) make an unauthorized discloser about a harmful situation or fraud.
    b) usually gain the respect and admiration of their colleagues.
    c) are usually financially rewarded by their organizations for their integrity.
    d) typically get promoted to management.
    e) All of the above

173. A principal factor contributing to the loss of the space shuttle *Challenger* was that
    a) its payload was too heavy.
    b) there were no experienced astronauts on board.
    c) the weather in Florida was unusually cold.
    d) it was hit by lightning.
    e) NASA was experimenting with a new type of fuel.

174. According to Michael McFarland, a team of engineers
    a) has more moral accountability than any of its members.
    b) has less moral accountability than any of its members.
    c) has the same amount of moral accountability as its members.
    d) should always designate a single person to be the ethical "watchdog."
    e) should always defer to management when ethical evaluations are being made.

Chapter 10

175. Manufacturing employment in the United States peaked
    a) during World War II.
    b) in 1959.
    c) in 1979.
    d) in 1999.
    e) None of the above is true. Manufacturing employment in the United States continues to increase.

176. One way automation can lead to the creation of new jobs is by
    a) producing products quicker, thus shortening the work week.
    b) reducing the price of a product, thus increasing people's real income.
    c) consuming fewer resources, thus improving the environment.
    d) All of the above
    e) None of the above is true. Automation always causes a net loss of jobs.

177. Productivity in the United States doubled between 1945 and 1990. However, the work week didn't get shorter because
    a) income taxes were raised.
    b) the standard of living increased.
    c) corporate downsizing reduced the number of people in the workforce.
    d) the pay of CEOs skyrocketed.
    e) taxes doubled between 1945 and 1990.

178. In medieval England, when wages went up,
    a) more children joined the labor force.
    b) more women joined the labor force.
    c) students dropped out of school to take up jobs.
    d) workers put in fewer hours.
    e) A, B, and C.

179. According to Max Weber, the growth of capitalism was stimulated by a new attitude toward work brought about by
    a) the Industrial Revolution.
    b) the Protestant Reformation.
    c) the English Civil War.
    d) the Lisbon earthquake of 1755.
    e) the American Revolution.

180. Artificial intelligence is the field of computer science and engineering that focuses on ways to get machines to exhibit
    a) consciousness.
    b) ethical behavior.
    c) intelligent behavior.
    d) philosophical insights.
    e) scientific breakthroughs.

181. According to the *Encyclopedia of Computer Science*, a "programmable machine that either in performance or appearance imitates human activities" is called a
    a) computer.
    b) deltoid.
    c) mechano.
    d) robot.
    e) transformer.

182. In 1997 IBM supercomputer Deep Blue
    a) defeated world chess champion Gary Kasparov in a six-game match.
    b) proved the existence of God.
    c) drove a minivan across the United States.
    d) designed the Pentium chip.
    e) replaced John O'Leary as Chief Financial Officer of IBM.

183. In 2011 a program named Watson running on an IBM supercomputer
    a) decoded the human genome for the first time.
    b) became the first computer program to take the job of a software engineer.
    c) won the World Crossword Puzzle Championship sponsored by *The New York Times.*
    d) defeated the two most successful human *Jeopardy!* champions in a three-game match.
    e) passed the Turing Test in a competition sponsored by the Association for Computing Machinery.

184. A personal AI is
    a) an intelligent machine inexpensive enough for an individual to purchase it.
    b) an intelligent machine devoted to serving an individual human being.
    c) a computer capable of beating human beings at games such as chess.
    d) a software program, not an actual physical object.
    e) a machine conscious of its own existence.

185. Supply-chain automation
    a) streamlines organizations by eliminating transactional middlemen.
    b) is one way Dell Computer keeps its costs low.
    c) links computers at different companies.
    d) All of the above
    e) None of the above

186. Globalization is
    a) the creation of international computer networks.
    b) the process of creating a worldwide network of businesses and markets.
    c) the adoption of global Internet standards.
    d) the adoption of English as the language of business.
    e) the way that stock exchanges stay open 24 hours a day.

187. The phrase "digital divide" refers to the situation where
    a) some people have access to information technology and others do not.
    b) users of Macintosh computers are at a disadvantage compared to users of Windows computers.
    c) only stockholders in high-tech companies can get rich in the new economy.
    d) the U.S. government prevents information technology from being exported to "unfriendly" countries.
    e) the prices of computers are kept artificially high in order to keep them out of the hands of people in Third World countries.

188. The process by which a new technology is assimilated into a society is called
    a) cultural relativism.
    b) globalization.
    c) IT leverage.
    d) social receptivity index.
    e) technological diffusion.

189. In some markets a few top performers receive a disproportionate share of the rewards. Frank and Cook call this phenomenon
    a) capitalism.
    b) inevitable.
    c) liberalism.
    d) socialism.
    e) the winner-take-all effect.

190. When one store stays open late to gain an advantage, its competitors begin to stay open late, too. At this point the first store is no better off than it was before, but now every store has additional expenses. This illustration is an example of what Frank and Cook call a
    a) capitalistic marathon.
    b) market economy.
    c) positional arms race.
    d) struggle for parity.
    e) virtual conflict.

Answers to the Multiple-choice Questions

1.b	39.a	77.b
2.a	40.a	78.c
3.b	41.a	79.c
4.b	42.c	80.d
5.e	43.b	81.b
6.c	44.e	82.d
7.c	45.c	83.d
8.d	46.e	84.a
9.b	47.a	85.e
10.c	48.b	86.c
11.c	49.b	87.a
12.b	50.c	88.e
13.c	51.b	89.b
14.e	52.c	90.d
15.c	53.e	91.d
16.d	54.b	92.a
17.c	55.d	93.d
18.d	56.c	94.e
19.e	57.a	95.d
20.c	58.a	96.a
21.a	59.b	97.a
22.c	60.b	98.e
23.c	61.e	99.e
24.c	62.c	100.d
25.a	63.b	101.e
26.e	64.c	102.d
27.c	65.e	103.c
28.a	66.e	104.c
29.a	67.e	105.b
30.d	68.d	106.d
31.a	69.a	107.e
32.a	70.d	108.d
33.d	71.c	109.d
34.b	72.e	110.b
35.c	73.b	111.e
36.a	74.c	112.c
37.a	75.b	113.e
38.b	76.d	114.d

115.b	155.d
116.e	156.e
117.d	157.a
118.e	158.e
119.c	159.e
120.a	160.d
121.d	161.a
122.b	162.d
123.b	163.b
124.a	164.d
125.b	165.e
126.b	166.e
127.b	167.c
128.a	168.b
129.c	169.d
130.e	170.b
131.d	171.e
132.d	172.a
133.c	173.c
134.a	174.a
135.e	175.c
136.d	176.b
137.a	177.b
138.b	178.d
139.d	179.b
140.e	180.c
141.c	181.d
142.e	182.a
143.d	183.d
144.d	184.e
145.a	185.d
146.d	186.b
147.c	187.a
148.c	188.e
149.b	189.e
150.b	190.c
151.a	
152.a	
153.d	
154.e	

Fill-in-the-blanks and Short-answer Questions

Chapter 1

1. Three important aids to manual calculating are **the tablet, the abacus, and mathematical tables**.

2. Blaise Pascal and Gottfried Leibniz are remembered as computer pioneers for their invention of **mechanical adding machines**.

3. Demand for mechanical calculators increased tremendously in America in the late 19th Century due to the increase in size of **corporations and government agencies**.

4. The adoption of mechanical calculators in offices changed the profession of bookkeeping. Employers **lowered wages** and **replaced men with women**.

5. The invention of the **cash register** addressed two challenges faced by department store owners in the late 19th century: creating detailed sales records and embezzlement by employees.

6. Herman Hollerith invented **punched card tabulation** to help the U.S. Bureau of the Census tally information about tens of millions of residents.

7. A series of inventions led to the creation of the electronic digital computer shortly after this war: **World War II**.

8. In the earliest digital computers every instruction was coded as a long number. People invented **programming languages** to make coding faster and less error-prone.

9. In the 1960s the invention of **time-sharing systems** allowed multiple people to interact more-or-less simultaneously with a single computer.

10. In the first half of the 20th century, AT&T used vacuum tubes to construct amplifiers that made long distance telephone calls possible. AT&T funded research to develop a semiconductor replacement to the vacuum tube. The research resulted in the invention of the **transistor**.

11. In 1957 eight key employees of Shockley Semiconductor left to form their own company. The company founded by "the traitorous eight" was **Fairchild Semiconductor**.

12. A single semiconductor device containing transistors, capacitors, and resistors is called **an integrated circuit**.

13. In 1964 IBM announced the System/360, a series of 19 compatible computers. What advantage do compatible computers have for a business wishing to upgrade its systems? **It does not have to rewrite its application programs.**

14. An integrated circuit that can be programmed to perform a wide variety of tasks is called a **microprocessor**.

15. The development of the personal computer was influenced by the power-to-the-people, do-it-yourself movement around **San Francisco / Silicon Valley** in the late 1960s and early 1970s.

16. What two significant developments made personal computers more attractive to businesses in the late 1970s and early 1980s? **Computer spreadsheet program, IBM PC**

17. By 1870 fire alarm boxes were in use in 75 major cities in the United States. Which popular communications technology enabled the creation of these alarm boxes? **Telegraph**

18. Which device resulted in the creation of the first "on-line" communities? **Telephone**

19. Why was the ARPANET designed so that the loss of any single computer would not prevent the rest of the network from working? **Fear of a nuclear attack by the Soviet Union**

20. How did the National Science Foundation stimulate the development of commercial, long-distance Internet connections in the United States? **It simultaneously (1) encouraged regional networks to find commercial customers, and (2) banned commercial traffic on the long-distance, NSFNET Backbone.**

21. Hypertext is a **linked network** of nodes containing **information**.

22. In January 1984 Apple Computer released the Macintosh. The Macintosh is notable because it was the first commodity personal computer with a **graphical user interface**.

23. The two most popular applications of the Internet are **email** and **the World Wide Web**.

24. Devices used in the creation, storage, manipulation, exchange, and dissemination of data, including text, sound, and images, fall into the category of **information** technology.

Chapter 2

25. Ethics is the **philosophical study** of morality.

26. Ethics is focused on the **voluntary**, moral choices people make.

27. The study of ethics dates back to the time of **Socrates**, who faced an unjust death penalty rather than take advantage of an opportunity to flee into exile with his family.

28. **Relativism** is the theory that there are no universal moral norms of right and wrong.

29. The theory that people decide for themselves what is right and wrong is called **subjective relativism**.

30. The theory that the meaning of "right" and "wrong" rests with a society's actual moral guidelines is called **cultural relativism**.

31. The theory that good actions are those aligned with the will of God is called **the divine command theory**.

32. The logical error of trying to equate two things that are similar is called **the equivalence fallacy**.

33. The theory that each person should focus exclusively on his or her own self-interest is called **ethical egoism**.

34. Immanuel Kant concluded that the only thing in the world that can be called good without qualification is **good will**.

35. Kant said we should act only from moral rules that we can at the same time will to be universal moral laws. He also said we should act so that we always treat ourselves and other people as ends in themselves, and never only as a means to an end. Kant called these duties **the Categorical Imperative**.

36. According to Jeremy Bentham and John Stuart Mill, an action is right (or wrong) to the extent that it increases (or decreases) **the total happiness of the affected parties**.

37. We call utilitarianism a **consequentialist** theory, because it focuses on the consequences of an action.

38. Thomas Hobbes argued that everyone living in a civilized society has implicitly agreed to two things: (1) establishment of moral rules to govern relations among citizens, and (2) a government capable of enforcing these rules. Hobbes calls this arrangement **the social contract**.

39. A negative right is a right that another person can guarantee by **leaving the person alone**.

40. A positive right is a right that obligates others to **do something for someone**.

41. An absolute right is a right that **is guaranteed without exception**.

42. A limited right is a right that **may be restricted based on the circumstances**.

43. John Rawls proposed the difference principle, that says any social and economic equalities must be "to the greatest benefit of **the least-advantaged members of society**."

44. In *The Nicomachean Ethics*, Aristotle writes that happiness results from **living a life of virtue**.

45. According to Aristotle, deriving pleasure from a virtuous act is a sign that **you have acquired that virtue**.

46. The theory that morality exists outside the human mind is called **objectivism**.

47. According to social contract theory, we have a *prima facie* obligation to obey the law.

Chapter 3

48. Unsolicited, bulk, commercial email is commonly called **spam**.

49. Trying to create a list of valid email addresses by sending email to randomly generated addresses and seeing which ones are delivered is called a **dictionary attack**.

50. Every object on the World Wide Web has a unique address called the **Uniform Resource Locator (URL)**.

51. A personal journal or diary kept on the Web is called a **blog**.

52. Mobile apps allow users of devices such as **smartphones and tablets** to access the Internet and download and upload data.

53. Web users have the ability to contribute content to the Web. This way of using the Web has been given the name **Web 2.0**.

54. An online method to get information or ideas from a large group of people is commonly known as **crowdsourcing**.

55. The Internet of Things refers to **Internet-connected devices that can be controlled remotely**.

56. Chinese "gold farmers" make a living by playing persistent online games and **selling virtual objects such as gold and artifacts over the Internet**.

57. Saudi Arabians have access to the Internet through a control center outside Riyadh which **blocks (filters out)** pornography sites, gambling sites, and sites offensive to Islam.

58. In 2003, the U.S. Supreme Court ruled that the Child Internet Protection Act was **constitutional**.

59. The attempt to suppress or regulate public access to material considered offensive or harmful is called **censorship**.

60. The three forms of direct censorship are **government monopoly**, **pre-publication review**, and **licensing and registration**.

61. John Stuart Mill held that an institution to intervene in the conduct of an individual only when the intervention is needed to prevent harm to others. This is called the **Principle of Harm**.

62. In 18th century America, there were no prior restraints on publication. This meant that colonists had the freedom to **publish without a license**.

63. The **First** Amendment to the Constitution guarantees freedom of speech and freedom of the press.

64. The act of assuming someone else's electronic identity is called **identity theft**.

65. From the point of view of Kant or Mill, the responsibility for excessive Internet use lies with **the individual user**.

Chapter 4

66. In *The Second Treatise of Government*, **John Locke** makes a case for a natural right to property.

67. The U.S. Congress addresses the tension between society's desire for inventions to be in the public domain and the inventor's expectation of profit by giving inventors exclusive rights to their discoveries **for a limited period of time**.

68. Merchandise 7X, the formula for Coca-Cola® syrup, is a famous example of a type of intellectual property known as a **trade secret**.

69. A company's logo is an example of a type of intellectual property that can be protected by a **trademark**.

70. **Kodak** had to pay Polaroid $925 million for violating seven of Polaroid's patents for instant photography.

71. In 1991 a U.S. District Court judge ordered **Kinko's** to pay $510,000 to a group of eight book publishers for violating their copyrights by producing photocopied packets of reading materials for college students.

72. Since the first Copyright Act was passed in 1790, both the length of copyright protection and the kinds of intellectual properties that can be copyrighted have **increased significantly**.

73. Under some circumstances it is legal to reproduce a copyrighted work without permission. These circumstances are called **fair use**.

74. In *Sony v. Universal City Studios*, the U.S. Supreme Court ruled that time shifting is **legal**.

75. In *RIAA v. Diamond Multimedia Systems, Inc*., the U.S. Court of Appeals ruled that space shifting is **legal**.

76. Arriba Soft Corporation was sued for copyright infringement because its Web search engine returned **thumbnail images of photos**. A court later ruled this was a fair use.

77. In December 2004 **Google** announced a plan to scan millions of books held by several of the world's largest libraries.

78. Sony BMG Music Entertainment's Extended Copy Protection system provoked controversy because it **secretly installed a rootkit on Windows computers**.

79. FairPlay was the name of Apple's **digital rights management / DRM** system.

80. Microsoft changed course after its proposed cloud-based gaming experience for the Xbox One received negative feedback from customers. Three features of the licensing agreement were most controversial: disc owners could share a disc only once, freedom to buy and sell used discs was restricted, and **Xbox consoles would have to check in online once every 24 hours**.

81. A **peer-to-peer** network allows computers running the same networking program to connect with each other and access files stored on each other's hard drives.

82. BitTorrent speeds file downloading by **allowing different pieces of a file to be downloaded simultaneously from different computers**.

83. In September 2003 the RIAA sued 261 individuals for **distributing copyrighted music over the Internet**.

84. The legal case *Apple Computer, Inc. v. Franklin Computer Corp.* established that **object programs** are copyrightable.

85. A **"clean room"** software development strategy helps ensure a company's software program does not duplicate any code in another company's product.

86. Thanks to the work of Stanford law professor Lawrence Lessig and his collaborators, you can use a **Creative Commons** license to retain the copyright while allowing some uses of your intellectual property under certain circumstances.

Chapter 5

87. In 1890 Harvard-trained lawyers **Samuel Warren** and **Louis Brandeis** wrote a highly influential article in the *Harvard Law Review* stating that people in modern society have a right to privacy and that this right ought to be respected.

88. **Judith Jarvis Thomson** suggested that we do not have to define privacy rights because every "privacy right" violation is a violation of another right as well.

89. A **public record** contains information about an incident or action reported to a government agency for the purpose of informing the public.

90. With enhanced 911 service, cell phone providers are able to **determine the location** of active cell phone users.

91. Manufacturers are replacing bar codes with **RFIDs / RFID tags** because they give more information about the product and are easier to scan.

92. A **cookie** is a file containing information about your visits to a Web site that is placed on your computer's hard drive by a Web server

93. The process of searching through one or more databases, looking for patterns or relationships, is called **data mining**.

94. When information collected for one purpose is put to another purpose, that is called a **secondary use** of the data.

95. Thanks to **the national credit bureau system / credit reports**, you can get a credit card from a bank or store with which you have never done business.

96. Privacy advocates have criticized Path, Twitter, Foursquare, and Instagram for producing apps that **gathered information from address books without asking for permission**.

Chapter 6

97. The Children's Online Privacy Protection Act requires online services to obtain parental consent before collecting any information from children **12** years old and younger.

98. The FBI maintains a collection of databases supporting the activities of federal, state, and local law-enforcement agencies in the United States, the U.S. Virgin Islands, Puerto Rico, and Canada. These databases are given the name **National Crime Information Center (NCIC)**.

99. The Privacy Act of 1974 applies only to **government** databases.

100. In *Nardone v. United States*, the U.S. Supreme Court ruled that evidence obtained by federal agents from warrantless wiretaps was **inadmissible in court**.

101. Between 1945 and 1975 the U.S. government secretly monitored telegram traffic entering and leaving the United States, as well as other communications. The name of this project was **Operation Shamrock**.

102. After the terrorist attacks of September 11, 2001, the U.S. Congress passed the **USA PATRIOT Act**, which gave federal law enforcement and intelligence officials greater authority to monitor communications.

103. In 2013, based on documents leaked by **Edward Snowden**, the British paper the *Guardian* revealed that Verizon was providing the National Security Agency records of all of its customers' calls on a daily basis.

104. The Fair Credit Reporting Act says credit bureaus may keep negative information about a consumer for a maximum of seven years. The two most important exceptions to the "seven year rule" are information about **bankruptcies** and **criminal convictions**.

105. The Fair and Accurate Credit Transactions Act requires the three major credit bureaus to provide customers a free copy of their credit report every **12** months.

106. The Family Education Rights and Privacy Act provides students **18** years of age and older the right to review their educational records.

107. The **Video Privacy Protection Act** prohibits video service providers from disclosing records without the written consent of the customer.

108. The Health Insurance Portability and Accountability Act limits how doctors, hospitals, and insurance companies can use **medical information** collected from patients.

109. The **Freedom of Information Act** is a federal law signed in 1966 that is designed to ensure that citizens have access to records of the U.S. government.

110. To protect citizens from interruptions by telemarketers, the U.S. Federal Trade Commission created the **Do Not Call Registry** in 2003.

111. The CALM Act, signed by President Obama in 2010, requires that television commercials **are played at the same volume as the programs they are interrupting**.

Chapter 7

112. A **virus** is a piece of self-replicating code embedded within another program called the host.

113. A file accompanying an email message is called an **attachment**.

114. A **worm** is a self-contained program that spreads through a computer network by exploiting security holes in the computers connected to the network.

115. According to some estimates, 90 percent of spam is distributed through **bot** networks.

116. A **firewall** is a computer, positioned between a local network and the Internet, that monitors the packets flowing in and out.

117. The manipulation of a person inside an organization to gain access to confidential information is called **social engineering**.

118. The **Computer Fraud and Abuse Act** criminalizes a wide variety of hacker-related activities.

119. An intentional action designed to prevent legitimate users from making use of a computer service is called a **denial-of-service (DoS) attack**.

120. Vote-counting irregularities in the State of **Florida** in the 2000 U.S. Presidential election led to more interest in computerized voting systems.

Chapter 8

121. A computer used as a component of a larger system is called an **embedded** system.

122. Computers that process data from sensors as events occur are called **real-time** systems.

123. During the Gulf War, the U.S. Army's **Patriot** missile system failed to shoot down a Scud missile that killed 28 soldiers in Saudi Arabia.

124. The Ariane 5 was a satellite launch vehicle designed by the **French** space agency.

125. On the afternoon of January 15, 1990, the long distance network of **AT&T** suffered a significant disruption of service.

126. In 1999 computer errors led to the loss of two NASA probes to **Mars**.

127. The inability of BAE Automated Systems to create an automated baggage handling system led to a significant delay in the opening of the new airport outside the city of **Denver**.

128. A software bug in a trading program at the **Tokyo** Stock Exchange caused a securities firm to lose $225 million in 2005.

129. To avoid a repeat of the problems plaguing the 2000 U.S. Presidential election, Congress passed the Help America Vote Act of 2002, providing states with money to replace **punch card voting systems**.

130. Between 1985 and 1987 the **Therac-25** linear accelerator administered massive overdoses to six patients, causing the deaths of three of them.

131. The process of determining if a computer program correctly implements a mathematical model is called **verification**.

132. Software engineers use a four-step process to develop a software product. These steps are called **specification**, **development**, **validation**, and **evolution**.

Chapter 9

133. A mature profession insists that its members complete an initial professional education. The process by which the profession assures that this formal course work meets its standards is called **accreditation**.

134. The process by which candidates are evaluated to determine their readiness to enter the profession is called **certification**.

135. Licensing gives the members of a profession the **legal right** to practice the profession.

136. The Software Engineering Code of Ethics and Professional Practice was developed by the two largest organizations supporting the computing field: **the IEEE Computer Society and the Association for Computing Machinery (ACM)**.

137. What is the stance of the ACM regarding the licensing of software engineers? **The ACM is opposed to the licensing of software engineers.**

138. Roger Boisjoly provided a Presidential commission with documents supporting his hypothesis about how the cold temperature had causes the failure of an O-ring on the Space Shuttle *Challenger*. For this action, Boisjoly was labeled a **whistleblower**.

139. Responsibility assigned because of a person's assigned duties is called **role responsibility**.

140. Michael McFarland argues that a team of engineers should be held to a higher level of moral responsibility than **any of its members**.

Chapter 10

141. The percentage of American workers involved in the **manufacturing** industry has dropped from 35 percent in 1947 to 10 percent in 2009.

142. Productivity in the United States doubled between 1948 and 1990. This productivity increase translated into a higher **standard of living** for the average American.

143. In 1997 IBM supercomputer Deep Blue defeated world champion Gary Kasparov playing the game of **chess**.

144. In 2001 Swedish appliance maker Electrolux introduced a domestic robotic **vacuum cleaner**.

145. An arrangement where employees spend a significant portion of their work day at a distance from the employer or traditional place of work is called **telework**.

146. Many software jobs are moving from the United States to India because India has many qualified computer programmers and **salaries are lower**.

147. The process of creating a worldwide network of businesses and markets is called **globalization**.

148. The situation where some people have access to modern information technology and others do not has been given the label "**the digital divide**."

149. The first people to adopt a new technology are those who have more money. As the technology matures, its price drops dramatically, enabling more people to acquire it. This process is called **technological diffusion**.

150. Robert Frank and Philip Cook have explored markets where a few top performers receive a disproportionate share of the rewards. They call them **winner-take-all** markets.

Essay Questions

Chapter 1

1. Think about a new computer or communication device you acquired in the past few years. Describe how the use of this device changed your view of the world or the way you related to other people.
2. Give two examples of how a social pressure or need led to the development of a new information technology. Give two examples of how the adoption of a new information technology changed society.
3. What major innovation in the Gilded Age stimulated the development of calculators and tabulators? Explain.
4. How did the widespread adoption of punched card tabulation pave the way for commercial digital electronic computers?
5. How did World War II stimulate the development of the modern computer?
6. How did the Cold War speed the development of the personal computer?
7. How did the development of time-sharing help create a market for personal computers?
8. How did the culture around San Francisco in the late 1960s and early 1970s affect the development of the personal computer?
9. Describe three ways in which the widespread adoption of the telephone changed society.
10. Trace the key events in the history of the Internet from its origins as the ARPANET.
11. Describe the evolution of hypertext, from its original conception to its realization as a widely used technology.

Chapter 2

12. Decide if you agree or disagree with the following statement: "If everyone were moral, there would be no need for ethics." Explain why you believe the statement is true or false.
13. Decide if you agree or disagree with the following statement: "If each individual decides what is right or wrong for himself or herself, then the study of ethics is meaningless." Explain why you believe the statement is true or false.
14. Explain the difference between relativism and objectivism.
15. Describe similarities and differences between subjective relativism and ethical egoism.
16. Describe similarities and differences between rule utilitarianism and social contract theory.
17. Describe similarities and differences between social contract theory and cultural relativism.
18. Why is it inaccurate to say that utilitarianism means "the most good for the most people?"
19. Imagine using the question "What would Jesus do?" as your principal guide to moral decision-making. Describe the similarities and differences between this philosophy and virtue ethics.
20. Can moral problems be solved in a completely algorithmic way, by following a fixed sequence of unambiguous, logical steps? Justify your answer.
21. Do you take both moral rules and anticipated consequences into account when making moral decisions? If so, give an example of how taking both rules and consequences into account leads to a better decision. If not, explain why using a single approach leads to a better decision.

Chapter 3

22. Why is freedom of expression not an absolute right? Give practical examples to illustrate your argument.
23. According to the U.S. Supreme Court, why do radio and television broadcasters have the most limited First Amendment rights?

24. What characteristics of the Internet make censorship of the Internet particularly difficult?
25. Describe how the governments of Saudi Arabia, the People's Republic of China, and the United States regulate the Web.
26. Explain how Mill's Principle of Harm relates to the moral issue of pornography on the Web.
27. Some believe that Internet addiction is real, but others disagree. Summarize the arguments on both sides of this question. Which side has the stronger argument? Why?

Chapter 4

28. Describe Locke's theory of a natural right to property. How well does his theory translate to intellectual property?
29. What are the ways that an individual or firm may protect intellectual property in the United States? Briefly describe the uses for each kind of intellectual property protection.
30. Describe the concept of fair use. How has digital rights management affected fair use?
31. Do you believe the Google Books project is a fair use of copyrighted material? Justify your answer.
32. Do you believe intellectual property protection for music will grow stronger or weaker in the years to come? Justify your position.
33. Summarize the laws and court decisions that have increased intellectual property protection for computer software.
34. The author concludes that arguments for granting intellectual property protection for software are not strong. Do you agree with the author? Explain your reasoning.
35. MGM and other entertainment industry interests sued Grokster and StreamCast for the copyright infringements of their users. Summarize the rulings of the U.S. District Court, the U.S. Court of Appeals for the Ninth Circuit, and the U.S. Supreme Court in this case. Include in your discussion the precedents cited by these courts.

Chapter 5

36. One of the provisions of the Fifth Amendment to the United States Constitution is that no person "shall be compelled in any criminal case to be a witness against himself." Relate this provision to the definition of privacy elaborated in the book.
37. Do you agree with Judith Jarvis Thomson that every "privacy right" violation is a violation of another right? Explain your position.
38. Name several ways that a typical unmarried 20-year-old may have more privacy now than an unmarried 20-year-old would have had 200 years ago.
39. Describe three modern information technology devices and how they may be used to decrease privacy.
40. Modern information technology allows a great deal of information to be collected, stored, searched, and rapidly retrieved. Give an example of how this capability benefits society.
41. Describe the Facebook Beacon service and explain why it raised privacy complaints after it was introduced.
42. What was the Netflix prize? Why did Netflix's actions raise privacy concern?
43. Give two examples of how organizations are applying the techniques of data mining to information contained in social networks.
44. Some online retailers are using information gathered about their customers to offer different prices to different people. What is your position on the morality of this strategy? Justify your answer.

Chapter 6

45. What are the four categories in Daniel Solove's taxonomy of privacy? For each one, give an example of a government activity in that category.

46. Choose one of the following pieces of federal legislation and explain how it limits the amount of information private entities can collect from individuals:
    a. Employee Polygraph Protection Act
    b. Children's Online Privacy Protection Act
    c. Genetic Information Nondiscrimination Act
47. According to federal law, the Census Bureau is supposed to keep confidential the information it has collected. Describe two instances in which this law was ignored.
48. Relate the Fourth Amendment to the United States Constitution to the definition of privacy elaborated in the book.
49. Trace the evolution of the U.S. Supreme Court's views on privacy, using *Olmstead v. United States* and *Katz v. United States* as two of your examples.
50. Explain the privacy implications of the Stored Communications Act. Why are privacy concerns with respect to this law greater now than when the law was first passed in 1986?
51. In what ways does the USA PATRIOT Act represent a challenge to the Fourth Amendment to the U.S. Constitution?
52. What are the principal limitations of the Privacy Act of 1974?
53. Some say police should be required to have a search warrant before using a drone to look inside the windows of someone's house. Others say police should be able to use a drone to collect evidence that will enable them to get a search warrant allowing police officers to enter the house. Which position do you support? Why?
54. Do you support the establishment of a national identification card? Why or why not?
55. Choose one of the following pieces of legislation and explain how it restricts the dissemination of personal information that organizations have collected.
    a. Family Education Rights and Privacy Act
    b. Video Privacy Protection Act
    c. Health Insurance Portability and Accountability Act

Chapter 7

56. Explain how the meaning of the word "hacker" changed between the 1950s and the 1990s.
57. Briefly relate the story of the Firesheep extension to the Firefox browser. What capability did Firesheep provide its users? What happened after Firesheep was released? Was Eric Butler wrong to release Firesheep to the public?
58. What is malware? Briefly describe four different kinds of malware.
59. Explain the similarities and differences between computer viruses and computer worms.
60. What is a botnet? Describe two uses of botnets.
61. What is a cyber attack? Give two examples of politically motivated cyber attacks since 2007.
62. Summarize the benefits and risks associated with online voting.

Chapter 8

63. For each of the following kinds of errors, define the error type and give an actual occurrence of an error of that type: data-entry error, data-retrieval error, software bug.
64. Explain the mistakes that led to the failure of the Patriot missile system.
65. Explain the mistakes that led to the failure of the Ariane 5 rocket.
66. Explain the mistakes that led to the failure of the AT&T long-distance network.
67. Explain the error that caused NASA's Mars Climate Orbiter to crash.
68. Explain the error that caused NASA's Mars Polar Lander to crash.
69. Explain the mistakes that led to the failure of the automated baggage system at Denver International Airport.
70. Explain the mistakes that led to the failure of the stock trading system at the Tokyo Stock Exchange.

71. Summarize the arguments supporting and opposing the adoption of direct recording electronic voting machines.
72. Nancy Leveson and Clark Turner wrote, "There is always another software bug." Relate this statement to the saga of the Therac-25 radiation therapy system.
73. What evidence is there that software quality is improving?
74. Explain how computer simulations are validated.
75. Explain why the courts reached different conclusions about the validity of software licenses in *Step-Saver Data Systems v. Wyse Technology and The Software Link* and *Mortenson v. Timberline Software*.

Chapter 9
76. In what ways are computer-related jobs similar to fully developed professions? How are computer-related careers different from a fully developed profession?
77. Why is good judgment required in order to use the Software Engineering Code of Ethics effectively?
78. How does virtue ethics relate to the Software Engineering Code of Ethics and Professional Practice?
79. Why is it usually difficult to assign moral responsibility for computer system failures to a particular individual? What are the implications for the organizations that create these systems?
80. What is whistle-blowing? What harms does it cause? What benefits does it provide? Why is whistleblowing rare?
81. Do you agree with Michael McFarland that a team of engineers bears greater moral responsibility than any individual member of the team? Explain.
82. Why do businesses and governments often use utilitarian thinking to determine the proper course of action? What is a disadvantage of the utilitarian approach to decision-making?

Chapter 10
83. Is automation↓replacing human workers with machines↓morally wrong? Justify your answer.
84. Is it morally wrong to try to construct a computer conscious of its own existence? Justify your answer.
85. Give examples of how information technology has influenced the way manufacturing and service companies organize themselves, create products, and interact with other companies.
86. Define the term "globalization" and explain how advances in information technology have stimulated globalization.
87. Describe recent events that provide evidence of globalization.
88. What is "the digital divide?" Describe the two fundamentally different dimensions of the digital divide.
89. Describe the two models of technological diffusion and explain how they are used by technological optimists (and technological pessimists) to predict the future of "the digital divide."
90. Do you agree with Robert Frank and Philip Cook that winner-take-all markets are bad for the economy? Explain.