

Understanding Pharmacology for Health Professionals, 5e (Turley)
Chapter 1 Introduction to Pharmacology and the History of Drugs

1.1 Multiple-Choice Questions

1) Pharmacology is the study of _____.

- A) how drugs are dispensed
- B) pills and how to give them
- C) drugs and their interactions with living organisms
- D) plants, herbs, minerals, and animals

Answer: C

Explanation: A) The dispensing of drugs is only a small part of the field of pharmacology.

B) While pharmacology includes these items, the field of pharmacology covers much more.

D) Some drugs come from these sources, but it is not the focus of the study of pharmacology.

2) The word *pharmacology* comes from _____.

- A) the Dutch word *droog* and a suffix meaning *the study of*
- B) the Greek word *pharmakon* and a suffix meaning *the study of*
- C) the Greek word *prophylaxis* and a suffix meaning *to study*
- D) the Latin word *medicina* and a suffix meaning *the study of*

Answer: B

Explanation: A) The Dutch word *droog* is where we get the word *drug*, not *pharmacology*.

C) The Greek word *prophylaxis* means *to keep guard before*. Prophylaxis is used as a preventive method.

D) The Latin word *medicina* is where we get the word *medicine* or *medication*, not *pharmacology*.

3) Drugs have three medical uses. Which of the following is NOT one of those uses?

- A) Drugs can provide evidence that a disease is present.
- B) Drugs can treat symptoms, signs, and diseases
- C) Drugs can prevent disease
- D) Drugs can cause symptoms, signs, and diseases

Answer: D

Explanation: A) This IS one of the three medical uses for drugs.

B) This IS one of the three medical uses for drugs.

C) This IS one of the three medical uses for drugs.

4) The use of drugs during radiological procedures and other medical tests to show evidence of a disease is known as _____.

- A) a preventive use
- B) a diagnostic use
- C) treating symptoms and signs of a disease
- D) none of the above

Answer: B

Explanation: A) The preventive use of drugs does not occur during a radiologic procedure.

C) Drugs used during radiologic procedures are not treating a disease.

D) One of these answers is correct.

5) The medicinal use of foxglove to make the drug digoxin (Lanoxin) is an example of a modern drug derived from _____.

- A) an animal
- B) a mineral
- C) a plant
- D) a trace element

Answer: C

Explanation: A) Foxglove is not derived from an animal.

B) Foxglove is not derived from a mineral.

D) Foxglove is not derived from a trace element.

6) The drug Premarin, a female hormone replacement used to treat the symptoms of menopause, is derived from _____.

- A) pregnant mares' urine
- B) margarine and oils
- C) the lanolin from processed sheep's wool
- D) powdered rose hips

Answer: A

Explanation: B) Premarin is not derived from margarine and oils.

C) Premarin is not derived from lanolin from processed sheep's wool.

D) Premarin is not derived from powdered rose hips.

7) Which of the following has NEVER been the source of a drug used to treat diabetes mellitus?

- A) ground-up beef pancreas
- B) Gila monsters
- C) ground-up pork pancreas
- D) lanolin from sheep

Answer: D

Explanation: A) Ground-up animal pancreas WAS a source of insulin for treating diabetes mellitus the past.

B) The saliva of the Gila monster IS a source of the antidiabetic drug Byetta.

C) Ground-up pig pancreas WAD a source of insulin for treating diabetes mellitus in the past.

8) It took a national tragedy to force a much-needed update of the Food and Drugs Act of 1906.

The drug that caused this national tragedy was _____.

- A) Ayer's Cherry Pectoral, which was used to treat respiratory ailments
- B) Cocaine Toothache Drops, which was used to treat toothache pain
- C) sulfonamide, an anti-infective drug
- D) thalidomide, which was used to treat morning sickness

Answer: C

Explanation: A) This drug did not cause the national tragedy, but was an example of a drug that contained an addictive substance.

B) This drug did not cause the national tragedy, but was an example of a drug that contained an addictive substance.

D) This drug caused tragedy in the 1950s in Europe, but was not approved for use in the United States.

9) As a result of a national tragedy, Congress passed The Food, Drug, and Cosmetic Act of 1938. One of the key parts of this act _____.

A) required manufacturers to list their drugs in the *United States Pharmacopeia* or *National Formulary*

B) made it mandatory that drugs had a pleasing taste and odor

C) required accurate labeling of drugs to prevent substitutions or mislabeling of ingredients

D) stated that the government no longer needed proof of fraud to stop the sale of a drug

Answer: D

Explanation: A) It was an amendment to The Food and Drugs Act of 1912 that stated that only drugs listed in these volumes could be prescribed.

B) This was part of the reason for the national tragedy, not a result. The makers of the drug sulfonamide tested the taste and odor, but not the safety of the drug.

C) This was an amendment to The Food and Drugs Act of 1912 that ensured this, not the Food, Drug, and Cosmetic Act of 1938.

10) In response to criticism that some drugs are available in other countries long before they are available in the U.S., which act was passed in 1997?

A) Compassionate Use IND

B) Emergency Treatment Investigational New Drug (IND)

C) Food and Drug Administration (FDA) Modernization Act

D) Health Insurance Portability and Accountability Act (HIPAA)

Answer: C

Explanation: A) The Compassionate Use IND involved drugs for a life-threatening diseases; it did not involve a time lag.

B) The Emergency Treatment Investigational New Drug involved drugs for a life-threatening diseases; it did not involve a time lag.

D) HIPAA deals with privacy and insurance, not a time lag.

11) Prescription drugs are defined as those drugs that _____.

A) meet clinical trial requirements and are approved by the FDA

B) are stronger than what is allowed for over-the-counter use

C) are not safe to use except under professional medical supervision

D) contain addictive properties that prevent over-the-counter use

Answer: C

Explanation: A) This is not a correct description of a prescription drug.

B) This is not a correct description of a prescription drug.

D) This is not a correct description of a prescription drug.

12) Which of the following statements concerning schedule drugs is TRUE?

- A) Schedule I drugs can be included—in small doses—in over-the-counter drugs.
- B) Schedule I drugs have the highest potential for abuse and addiction, while Schedule V drugs have the lowest.
- C) Schedule V drugs are not available under any circumstances, even with a prescription.
- D) Schedule V drugs have the highest potential for abuse and addiction, while Schedule I drugs have the lowest.

Answer: B

Explanation: A) Schedule I drugs have no currently accepted medical use.

C) It is Schedule I drugs, not Schedule V drugs, that are not available under any circumstances. Schedule V drugs are available.

D) It is Schedule I drugs that have the highest potential for abuse and addiction, while Schedule V drugs have the lowest.

13) The Orphan Drug Act was passed to _____.

- A) facilitate the development of new drugs to treat rare diseases
- B) make drug companies responsible for drug substitution and mislabeling that caused deaths
- C) require drug companies to provide an accurate list of the drug's ingredients
- D) speed up the approval process of new drugs

Answer: A

Explanation: B) This occurred in the 1912 amendment to The Food and Drugs Act of 1906, not the Orphan Drug Act.

C) This occurred in the 1912 amendment to The Food and Drugs Act of 1906, not the Orphan Drug Act.

D) This occurred in The Food and Drug Administration (FDA) Modernization Act, not the Orphan Drug Act.

14) When analgesic drugs are used to control arthritis pain, this is an example of the _____ use of drugs.

- A) therapeutic
- B) pharmacologic
- C) preventive
- D) diagnostic

Answer: A

Explanation: B) The pharmacologic use of drugs is too broad a concept and would include every drug and every use.

C) Analgesic drugs are not used to prevent pain.

D) Analgesic drugs are not used to diagnose pain.

15) One drug used to treat Alzheimer's disease was originally derived from _____.

- A) yams
- B) periwinkle
- C) daffodils
- D) autumn crocus

Answer: C

Explanation: A) Some estrogen hormone replacement therapy drugs are derived from yams.

B) The drug vincristine to treat cancer is derived from periwinkle.

D) Colchicine to treat gout is derived from the autumn crocus.

16) Original plant sources of some commonly used drugs include all of the following EXCEPT

_____.

- A) oak tree
- B) rose hips
- C) hot pepper plant
- D) opium poppy

Answer: A

Explanation: B) Rose hips are an original plant source for vitamin C.

C) The hot pepper plant is an original plant source of capsaicin for topical pain relief.

D) The opium poppy is an original plant source for morphine.

17) What common ingredient of topical skin drugs is derived from the purified fat of processed sheep's wool?

- A) vitamin C
- B) calcium
- C) aspirin
- D) lanolin

Answer: D

Explanation: A) Vitamin C is derived from rose hips.

B) Calcium is a mineral.

C) Aspirin was derived from willow bark.

18) Which drugs were introduced in the decade of the 1990s?

- A) penicillin (first antibiotic drug), Benadryl (first antihistamine drug), cortisone (first corticosteroid drug)
- B) Thorazine (first antipsychotic drug), hydrocortisone (first topical corticosteroid drug), polio vaccine
- C) Inderal (first beta-blocker drug), Tagamet (first H₂ blocker drug), levodopa (for Parkinson's disease)
- D) Proscar (for benign prostatic hypertrophy), Nicoderm (for stopping smoking), Viagra (for erectile dysfunction)

Answer: D

Explanation: A) Penicillin was introduced in 1941; Benadryl was introduced in 1945, and cortisone was introduced in 1948.

B) Thorazine was introduced in 1952, hydrocortisone was introduced in 1952, and the polio vaccine was introduced in 1955.

C) Inderal was introduced in 1967, Tagamet was introduced in 1977, and levodopa was introduced in 1970.

19) Penicillin was first introduced about the year _____.

- A) 1850
- B) 1900
- C) 1940
- D) 2000

Answer: C

Explanation: A) Penicillin was introduced much later than 1850.

B) Penicillin was introduced much later than 1900.

D) Penicillin was introduced much earlier than 2000.

20) Aspirin was first introduced about the year _____.

- A) 1750
- B) 1900
- C) 1960
- D) 2000

Answer: B

Explanation: A) Aspirin was introduced in 1899.

C) Aspirin was introduced much earlier than 1960.

D) Aspirin was introduced much earlier than 2000.

21) The drug digoxin (Lanoxin) that is used today to treat congestive heart failure was derived from the _____.

- A) foxglove plant
- B) belladonna plant
- C) opium poppy flower
- D) French lilac flower

Answer: A

Explanation: B) This drug was not derived from the belladonna plant.

C) This drug was not derived from the opium poppy flower.

D) This drug was not derived from the French lilac flower.

- 22) The first monoclonal antibody drug (Orthoclone OKT3) was developed in _____.
A) 1896
B) 1936
C) 1986
D) 2010

Answer: C

Explanation: A) The first monoclonal antibody drug was developed later than this.
B) The first monoclonal antibody drug was developed later than this.
D) The first monoclonal antibody drug was developed before this.

- 23) Which drug was historically introduced first?
A) Tagamet for peptic ulcers (first H₂ blocker drug)
B) Morphine for pain, from the opium poppy
C) Humulin (human insulin) (first recombinant DNA technology drug)
D) AZT (first drug for HIV)

Answer: B

Explanation: A) Tagamet was introduced in 1977.
B) It was introduced in 1806.
C) Humulin (human insulin) was introduced in 1982.
D) AZT was introduced in 1987.

- 24) The government agency responsible for regulating the manufacturing and dispensing of controlled substances is called the _____.
A) Drug Enforcement Administration (DEA)
B) Food and Drug Administration (FDA)
C) United States Pharmacopeia
D) Schedule Drug Agency

Answer: A

Explanation: B) The Food and Drug Administration (FDA) reviews drugs during clinical trials and evaluates their safety.
C) The *United States Pharmacopeia* is a book that lists all the drugs that are approved.
D) There is no such governmental agency.

- 25) Currently, the burden of proof for showing that a drug is safe before it can be marketed is the responsibility of the _____.
A) drug company
B) consumer
C) physician
D) Food and Drug Administration (FDA)

Answer: A

Explanation: B) The consumer cannot prove that a drug is safe before it is marketed.
C) The physician cannot prove that a drug is safe before it is marketed.
D) The FDA approves a drug for marketing only after it has been proven safe.

26) A schedule defines drugs by their _____.

- A) classification or category
- B) potential for physical dependence
- C) potential for psychological dependence
- D) B and C

Answer: D

Explanation: A) A schedule is a classification or category, but not a definition.

B) This is true, but it is not the only correct answer.

C) This is true, but it is not the only correct answer.

27) An example of a Schedule I drug is _____.

- A) aspirin
- B) Ambien
- C) LSD
- D) all of the above

Answer: C

Explanation: A) Aspirin is not a schedule drug. It is an over-the-counter drug with no potential for addiction.

B) Ambien is a Schedule IV drug, not a Schedule I drug.

D) Aspirin and Ambien are not Schedule I drugs.

28) The Controlled Substances Act created _____ categories of drugs based on their potential for addiction.

- A) seven
- B) three
- C) five
- D) ten

Answer: C

Explanation: A) There are not seven categories of controlled substances.

B) There are not three categories of controlled substances.

D) There are not ten categories of controlled substances.

29) In response to the tragedy of babies born with seal limbs because of thalidomide, this legislation required drugs to be both safe and effective before being marketed.

- A) Food and Drug Modernization Act of 1997
- B) Kefauver-Harris Amendment of 1962
- C) Food, Drug, and Cosmetic Act of 1938
- D) The Food and Drugs Act of 1906

Answer: B

Explanation: A) The FDA Modernization Act of 1997 came much later than the thalidomide tragedy.

C) The Food, Drug, and Cosmetic Act of 1938 came before the thalidomide tragedy.

D) The Food and Drugs Act of 1906 came before the thalidomide tragedy.

30) Complete this inscription that is commonly seen on the drug package: "Caution: Federal law prohibits _____."

- A) the use of Schedule I drugs
- B) the regulation of prescription drugs
- C) dispensing by a nurse
- D) dispensing without a prescription

Answer: D

Explanation: A) Schedule I drugs are not available under any circumstances and are not mentioned on drug package labels.

B) This is not on the drug package. The Food and Drug Administration (FDA) regulates prescription drugs.

C) Drug package labels do not refer to nurses.

31) The belladonna plant was the original source of the drugs _____ that are still used today.

- A) atropine and digoxin
- B) ephedrine and morphine
- C) atropine and scopolamine
- D) colchicine and morphine

Answer: C

Explanation: A) Atropine is from the belladonna plant, but digoxin is from the foxglove plant.

B) Ephedrine is from the *Ephedra* shrub, and morphine is from the opium poppy plant.

D) Colchicine is from the autumn crocus, and morphine is from the opium poppy plant.

32) Powdered rose hips from the rose plant are still used today as a natural source of _____.

- A) morphine
- B) vitamin C
- C) insulin
- D) all of the above

Answer: B

Explanation: A) Morphine is from the opium poppy plant.

C) Insulin is not derived from rose hips.

D) Powdered rose hips are the natural source for only one of these drugs.

33) All of the following are minerals that are used in drugs or as dietary supplements EXCEPT _____.

- A) iron
- B) calcium
- C) gold
- D) cinchona bark

Answer: D

Explanation: A) Iron is a mineral that is used as a dietary supplement.

B) Calcium is a mineral that is used as a dietary supplement.

C) Gold is used in a drug for rheumatoid arthritis.

D) This is a plant, not a mineral.

34) Jamie Alvarez is going to fly in an airplane for the first time. She is afraid she might experience motion sickness, so she has decided to take the over-the-counter drug Dramamine. This is an example of the _____ use of a drug.

- A) preventive
- B) therapeutic
- C) diagnostic
- D) all of the above

Answer: A

Explanation: B) Dramamine is not used to treat nausea and vomiting once it has occurred.

C) Dramamine is not used to diagnose motion sickness.

D) Dramamine only falls under one of these uses of drugs, not all of them.

35) The Health Insurance Portability and Accountability Act (HIPAA) of 1996 is concerned with the _____ of patient medical and drug information.

- A) accuracy
- B) identity
- C) security
- D) all of the above

Answer: C

Explanation: A) HIPAA does not address the accuracy of patient medical and drug information.

B) HIPAA does not address the identify of patient medical and drug information.

D) HIPAA only addresses the security of patient medical and drug information.

36) The majority of drugs are used to control, improve, or cure symptoms, signs, and diseases of a physiological or psychological nature. This is categorized as a _____ use.

- A) preventive
- B) diagnostic
- C) prescription
- D) therapeutic

Answer: D

Explanation: A) Drugs for preventive use are taken before symptoms and diseases occur.

B) Drugs for diagnostic use do not cure symptoms or diseases.

C) Prescription drugs are not the only kinds of drugs used to cure symptoms or diseases.

37) A prescription drug can be obtained with a _____.

- A) written prescription from a physician
- B) verbal order from a dentist
- C) written prescription or verbal order from a healthcare professional whose license permits this
- D) all of the above

Answer: D

Explanation: A) This is true, but it is not the only correct answer.

B) This is true, but it is not the only correct answer.

C) This is true, but it is not the only correct answer.

38) Which of these ancient peoples practiced pharmacology?

- A) Egyptians
- B) Chinese
- C) Native Americans of North America and Aztec Indians of Mexico
- D) all of the above

Answer: D

Explanation: A) This is true, but it is not the only correct answer.

B) This is true, but it is not the only correct answer.

C) This is true, but it is not the only correct answer.

39) If you had lived during the 1700s and 1800s, it would not have been unusual for you to _____.

- A) have taken a drug that contained opium, morphine, heroin, or cocaine
- B) be addicted without knowing it after taking a drug for a common disease
- C) take a drug whose addictive ingredients were not listed on the label
- D) all of the above

Answer: D

Explanation: A) This is true, but it is not the only correct answer.

B) This is true, but it is not the only correct answer.

C) This is true, but it is not the only correct answer.

40) Drug legislation was passed in the early 1900s to protect the public from _____.

- A) unscrupulous drug sellers
- B) prescription drugs
- C) worthless, mislabeled, and dangerous drugs
- D) A and C

Answer: D

Explanation: A) This is true, but it is not the only correct answer.

B) It was not until the Durham-Humphrey Amendment of 1951 that prescription drugs were defined.

C) This is true, but it is not the only correct answer.

41) The first federal drug law was the _____.

- A) Food, Drug, and Cosmetic Act
- B) Dietary Supplements and Health and Education Act
- C) Pure Food and Drugs Act
- D) Food and Drug Administration Modernization Act

Answer: C

Explanation: A) This was not the first federal drug law.

B) This was not the first federal drug law.

D) This was not the first federal law.

42) The 1951 Durham-Humphrey Amendment to the Food, Drug, and Cosmetic Act defined _____ drugs as those drugs that could only be given to patients under the care of a physician.

- A) dangerous
- B) prescription
- C) schedule
- D) all of the above

Answer: B

Explanation: A) The Durham-Humphrey Amendment did not mention dangerous drugs.

C) Schedule drugs were defined by the Controlled Substances Act, not the Durham-Humphrey Amendment.

D) The Durham-Humphrey Amendment did not mention dangerous or schedule drugs.

43) The FDA will allow a prescription drug to be reclassified as an over-the-counter (OTC) drug if _____.

- A) the prescription drug is too dangerous to use at its higher doses
- B) a patient can easily diagnose and monitor his/her own condition
- C) there is enough public pressure after a drug tragedy
- D) all of the above

Answer: B

Explanation: A) If a prescription drug is too dangerous, the FDA will remove it from the market, not reclassify it as an over-the-counter drug.

C) This is not one of the reasons for reclassifying a prescription drug as an OTC drug.

D) One of these is a reason for reclassifying, but not all of them.

44) All of the following are advantages to reclassifying a prescription drug to be an over-the-counter drug (OTC), EXCEPT _____.

- A) the cost of the OTC drug will be lower
- B) the patient will have better access to quick treatment
- C) there is a greater chance for drug-drug interactions
- D) the patient will need fewer doctor visits for prescription refills

Answer: C

Explanation: A) This is an advantage for OTC drugs.

B) This is an advantage for OTC drugs.

C) This is a disadvantage of OTC drugs.

D) This is an advantage for OTC drugs.

45) The Controlled Substances Act of 1970 did all of the following, EXCEPT _____.

- A) regulate controlled substances
- B) introduce the word *narcotic*
- C) divide potentially addictive drugs into categories
- D) regulate schedule drugs

Answer: B

Explanation: A) It did do this.

B) The word *narcotic* was introduced by The Harrison Narcotics Act of 1914.

C) It did do this.

D) It did do this.

46) In 1853, Dr. Alexander Wood of Scotland created the first _____.

- A) polio vaccine
- B) prescription drug
- C) hypodermic syringe
- D) antibiotic drug

Answer: C

Explanation: A) The first polio vaccine was introduced in 1955.

B) A prescription drug was not defined by law until 1951.

D) The first antibiotic drug was not introduced until 1941.

47) Pharmacology includes all of the following interrelated topics, EXCEPT _____.

- A) philosophy and religion
- B) molecular chemistry and genetics
- C) patient education
- D) legislation and technology

Answer: A

Explanation: A) Pharmacology does not cover these topics.

B) Pharmacology does cover these topics.

C) Pharmacology does cover this topic.

D) Pharmacology does cover these topics.

48) The combining of several ingredients to form a single drug is known as _____.

- A) molecular pharmacology
- B) personalized medicine
- C) compounding
- D) human genome

Answer: C

49) Which of the following is true about drugs in the Middle Ages?

- A) Some of the drug ingredients were based on medical lore and superstition.
- B) Some of the drug ingredients were therapeutic.
- C) Some of the drug ingredients were worthless or even harmful.
- D) all of the above

Answer: D

50) The mineral gold is used to treat _____.

- A) diabetes mellitus
- B) rheumatoid arthritis
- C) mineral deficiency
- D) baldness

Answer: B

Explanation: A) Gold is not used to treat diabetes mellitus.

C) Gold is not used to treat a mineral deficiency.

D) Gold is not used to treat baldness.

51) The thalidomide drug tragedy occurred in the late 1950s when the drug _____.

- A) was used to treat nausea and vomiting in pregnant women
- B) caused babies to be born with seal limbs
- C) was prescribed in Europe, but not the United States
- D) all of the above

Answer: D

Explanation: A) This is true, but it is not the only correct answer.

B) This is true, but it is not the only correct answer.

C) This is true, but it is not the only correct answer.

52) Which organization requires that a hospital develop its own list of acceptable medical and drug abbreviations to avoid drug errors?

- A) Drug Enforcement Agency
- B) Joint Commission
- C) Medicare
- D) Food and Drug Administration

Answer: B

Explanation: A) The DEA does not require this.

C) Medicare does not require this.

D) The FDA does not require this.

53) States that allow healthcare providers to prescribe controlled substances first require them to register at the federal level with _____.

- A) the Drug Enforcement Agency
- B) Medicare
- C) Joint Commission
- D) the Food and Drug Administration

Answer: A

Explanation: B) Medicare does not deal with controlled substances.

C) The Joint Commission does not deal with controlled substances.

D) The FDA does not deal with controlled substances.

54) Designer drugs _____.

- A) are created by slightly modifying the molecular structure of a Schedule I or II drug.
- B) are also known as analog drugs
- C) are created to avoid prosecution under existing drug laws.
- D) all of the above

Answer: D

Explanation: A) This is true, but it is not the only correct answer.

B) This is true, but it is not the only correct answer.

C) This is true, but it is not the only correct answer.

55) The Federal Analogue Act of 1986 made it easier to prosecute those who produced and sold _____.

- A) prescription drugs
- B) designer drugs
- C) over-the-counter drugs
- D) schedule drugs

Answer: B

Explanation: A) This Act does not deal with prescription drugs.

C) This Act does not deal with over-the-counter drugs.

D) This Act does not deal with legal schedule drugs.

56) A list of all drugs being used, their ingredients, their uses, and how to prepare them was known as _____.

- A) a recipe
- B) pharmacology
- C) a pharmacopoeia
- D) an apothecary

Answer: C

Explanation: A) A recipe is a list of ingredients, but for just one drug.

B) Pharmacology is a study area, not a list.

D) An apothecary is a storehouse of drugs, not a list.

57) The apothecary system of measurement included all of the following, EXCEPT _____.

- A) drams
- B) milliliters
- C) grains
- D) scruples

Answer: B

Explanation: A) Drams were part of the apothecary system.

B) Millimeters are not part of the apothecary system.

C) Grains were part of the apothecary system.

D) Scruples were part of the apothecary system.

58) The first drug ever approved by the FDA to treat the nausea and vomiting of pregnancy was _____.

- A) AZT
- B) thalidomide
- C) Diclegis
- D) Viagra

Answer: C

Explanation: A) AZT was the first drug used to treat HIV.

B) Thalidomide was never approved by the FDA after it caused seal limb deformities in fetuses in Europe.

D) Viagra is used to treat erectile dysfunction in men.

- 59) The FDA Safety and Administration Act allowed the FDA to _____.
A) impose penalties for not having inspection of drugs imported from outside the U.S.
B) include a provision for "breakthrough therapy"
C) speed up review of a drug that was clearly better than others already on the market
D) all of the above

Answer: D

Explanation: A) This is true, but it is not the only correct statement.

B) This is true, but it is not the only correct statement.

C) This is true, but it is not the only correct statement.

- 60) According to the federal Controlled Substances Act of 1970, marijuana is an illegal Schedule _____ drug.

- A) I
B) II
C) III
D) IV

Answer: A

Explanation: B) Schedule II drugs are not illegal.

C) Schedule III drugs are not illegal.

D) Schedule IV drugs are not illegal.

- 61) An important patient safety issue was solved in 1984 with the introduction of _____.
A) drug legislation

- B) the human genome
C) childproof caps for drugs
D) orphan drugs

Answer: C

Explanation: A) There was no specific drug legislation for patient safety in 1984.

B) This does not have to do with patient safety.

D) Orphan drugs treat rare diseases.

1.2 True/False Questions

- 1) The discipline of pharmacology impacts a student's chosen career as well as his/her personal life.

Answer: TRUE

- 2) In common usage, the word *drug* can be used interchangeably with the word *medicine*.

Answer: TRUE

- 3) The Egyptians applied moldy bread to abrasions, a practice that we now know actually had some therapeutic basis.

Answer: TRUE

- 4) The opium poppy has been used for centuries as a recreational drug to cause euphoria and is also used to treat severe pain.

Answer: TRUE

5) Some estrogen replacement therapy drugs are derived from yams.

Answer: TRUE

6) Multivitamin supplements contain minerals such as calcium, iron, gold, copper, and zinc.

Answer: FALSE

Explanation: Gold is only found in the drug auranofin (Ridaura), which is used to treat rheumatoid arthritis.

7) The isolation of potassium from water in 1806 by a German pharmacist marked the beginning of modern drug treatment using chemically pure ingredients.

Answer: FALSE

Explanation: It was the isolation of morphine, not potassium.

8) In the early 1900s, pharmacists used cocoa butter as an ingredient in making hand-rolled suppositories.

Answer: TRUE

9) Drugs in the 1700s and 1800s often listed an addictive ingredient on its label, and consumers knew to avoid this.

Answer: FALSE

Explanation: Consumers did not recognize the name of addictive ingredients and many became addicted.

10) The Dietary Supplements and Health and Education Act of 1994 made the FDA responsible for regulating all herbal products and dietary supplements.

Answer: FALSE

Explanation: The Act makes drug companies liable for claims against their herbal products and dietary supplements according to FDA guidelines.

11) The FDA regulates prescription drugs, but not over-the-counter (OTC) drugs.

Answer: FALSE

Explanation: The FDA regulates both prescription and OTC drugs.

12) Prescription drugs can only be obtained with a written order or a verbal order from a healthcare provider whose license permits this.

Answer: TRUE

13) An OTC drug is defined as a drug that can be purchased without a prescription and is generally considered safe for consumers to use if the label's directions and warnings are followed carefully and all warnings are heeded.

Answer: TRUE

14) The FDA regulates prescription drugs, but the DEA regulates over-the-counter drugs.

Answer: FALSE

Explanation: The FDA regulates both prescription and OTC drugs.

15) The FDA only allows physicians to prescribe FDA-approved drugs that are already on the market.

Answer: FALSE

Explanation: The FDA allows physicians to prescribe investigational drugs.

16) In order to prevent childhood diseases, the American Academy of Pediatrics issues an annual immunization schedule listing the immunizations to be given to children before they enroll in school.

Answer: TRUE

17) A drug or a medicine can be thought of as any nonfood chemical substance that affects the mind or the body.

Answer: TRUE

18) The word *drug* can mean a medicine, but it can also refer to illegal or street drugs.

Answer: TRUE

19) The 1994 Dietary Supplement Health and Education Act gives the FDA the authority to regulate dietary supplements as drugs.

Answer: FALSE

Explanation: The FDA does not have this authority.

20) On a written prescription for a schedule drug, the physician must include his/her DEA number.

Answer: TRUE

21) As they did in the early 1900s, pharmacists today still daily prepare the drugs they dispense, and they also have the added duties of dispensing those drugs and providing patient education and information.

Answer: FALSE

Explanation: The pharmacist usually does not prepare drugs any more.

22) The marijuana plant is sold as the prescription drugs Cesamet and Marinol.

Answer: FALSE

Explanation: These drugs are synthetic drugs that are similar to marijuana.

23) Legend drugs are also known as over-the-counter drugs.

Answer: FALSE

Explanation: Legend drugs are also known as prescription drugs.

24) Traditional Chinese herbal remedies have not been found to be effective or therapeutic according to Western standards of medicine.

Answer: FALSE

Explanation: They have been found to be therapeutic.

25) We know from reading the newspaper that cocaine is available illegally as a street drug, but cocaine is also a Schedule II drug with legitimate medical uses.

Answer: TRUE

26) The manufacturing, storage, dispensing, and disposal of controlled substances are strictly regulated by both federal and state laws.

Answer: TRUE

27) Pharmacology is one of the oldest branches of medicine.

Answer: TRUE

28) A schedule drug is also known as a *controlled substance*.

Answer: TRUE

29) Before approving a new drug, the FDA must weigh the inherent risks of the drug against its potential benefits.

Answer: TRUE

30) The Orphan Drug Act facilitates the development of new drugs to treat patients who are poor and needy and cannot afford medical care.

Answer: FALSE

Explanation: It facilitates the development of new drugs to treat rare diseases that affect fewer than 200,000 people.

31) By law, the over-the-counter version of a prescription drug can only have one half the strength of the prescription drug.

Answer: FALSE

Explanation: The OTC drug sometimes has the same strength as the prescription drug.

32) The *United States Pharmacopoeia* was officially adopted for use in the United States with the passage of the Food and Drug Administration Modernization Act.

Answer: FALSE

Explanation: The United States Pharmacopoeia was adopted in 1907 with the passage of the National Food and Drugs Act.

33) Medicare Part D is a federal program to pay part of the cost of prescription drugs for senior citizens.

Answer: TRUE

34) Pharmacies in each state and the pharmacists working in them must be licensed by that state.

Answer: TRUE

35) The first oral contraceptive pill was introduced in 2000.

Answer: FALSE

Explanation: It was introduced in 1960.

36) Mold is the original plant source for penicillin, the first antibiotic drug.

Answer: TRUE

37) The first law that regulated drugs with the potential for abuse and dependence was The Harrison Narcotics Act of 1914.

Answer: TRUE

1.3 Short Answer Questions

1) The word _____ is derived from a Dutch word that means *dry*, and it refers to the use of dried herbs and plants as the first medicines.

Answer: drug

2) The administration of a preventive drug is known as _____, from a Greek word meaning *to keep guard before*.

Answer: prophylaxis

3) The symbol _____, which comes from the Latin word *recipere*, meaning *to take*, indicates a prescription for a drug (originally one whose recipe contained one or more ingredients).

Answer: Rx

4) The Controlled Substance Act divided potentially addictive drugs into five categories or _____ based on their potential for physical and psychological dependence.

Answer: five

5) The word _____ refers to a drug that is deliberately administered for its medicinal value as a preventive, diagnostic, or therapeutic agent.

Answer: medicine

6) The abbreviation FDA stands for the _____.

Answer: Food and Drug Administration

7) The abbreviation IND, as used in the Emergency Treatment IND or Compassionate Use IND, stands for _____.

Answer: investigational new drug

8) In 1983, the topical prescription drug _____ was the first prescription drug approved for use as an over-the-counter drug.

Answer: hydrocortisone

9) Define these abbreviations.

DEA _____

IND _____

FDA _____

OTC _____

Answer: Drug Enforcement Administration, Investigational New Drug, Food and Drug Administration, over-the-counter

10) Today's modern pharmacy began as a storehouse for dried plants and herbs that was known as an _____.

Answer: apothecary

11) We can remember that the drug auranofin (Ridaura) is used to treat rheumatoid arthritis because the "au" in its drugs names stand for the chemical symbol Au for the mineral _____.

Answer: gold

12) In 1796, Dr. Edward Jenner created the first vaccination, which was given to prevent the disease of _____.

Answer: smallpox

13) In 1922, the first drug to treat diabetes mellitus was introduced, which was the drug _____.

Answer: insulin

14) The first drug to be made by recombinant DNA technology was introduced in 1982; it was human insulin, and its trade name was _____.

Answer: Humulin

15) Deciphering the human _____ in 2000 opened up the field of gene therapy in pharmacology.

Answer: genome

16) Despite the Supreme Court ruling that marijuana is an illegal drug, what two states have passed laws allowing marijuana to be sold for both medical and recreational uses.

Answer: Colorado, Washington state

17) The antidiabetic drug exenatide (Byetta) comes from the _____ of the Gila monster poisonous lizard.

Answer: saliva

1.4 Matching Questions

Match the examples with their correct medical use.

- A) prevent diseases
- B) diagnose disease
- C) treat symptoms, signs, conditions, and diseases

- 1) vaccinations given to immunize children
- 2) radiopaque dye used during x-ray procedures
- 3) antibiotics to kill bacteria and cure an infection
- 4) insulin to treat diabetes mellitus
- 5) contraceptive pills taken to prevent pregnancy

Answers: 1) A 2) B 3) C 4) C 5) A

1.5 Essay Questions

1) The FDA approves a prescription drug being reclassified as an over-the-counter drug if one of four criteria are met. List two of the four criteria that needs to be met.

Answer: The FDA approves a prescription drug being reclassified as an OTC drug if the following criteria are met: (1) the indication for the drug's OTC use is similar to its use as a prescription drug, (2) the patient can easily diagnose and monitor his or her own condition when using the OTC drug, (3) the OTC drug has a low rate of side effects/toxicity and a low potential for abuse, and (4) use of the OTC drug does not require the patient to have any special monitoring or ongoing tests.

2) List and describe one of the incentives given to drug companies under the Orphan Drug Act to encourage them to develop drugs for rare diseases.

Answer: The Orphan Drug Act provided special financial incentives to a drug company including federal grants to offset drug development costs, a tax credit that allowed the drug manufacturer to deduct up to 75% of the cost of clinical trials, a streamlined process for obtaining FDA approval, and exclusive marketing rights for seven years.

3) Provide a brief comparison between the definitions of these words: drug, medicine, and prescription drug.

Answer: The word *drug* means *dry* and refers to the use of dried herbs and plants as the first medicines. The Latin word for *drug* is *medicina*, from which we derive the words **medicine** and **medication**. A drug is any nonfood chemical substance that affects the mind or the body. The word *medicine* refers to a drug that is deliberately administered for its medicinal value as a preventive, diagnostic, or therapeutic agent. In common usage, the word *drug* can be used interchangeably with the word *medicine*, but *drug* can also refer to chemical substances that do not have a preventive, diagnostic, or therapeutic use (example: an illegal or street drug).

4) What was the Supreme Court's decision concerning marijuana in May 2001?

Answer: Supreme Court heard a case that sought an exemption from the federal law for cases of medical necessity, and the American Medical Association (AMA) supported this exemption. However, the Supreme Court ruled that the federal drug law that bans the manufacture and distribution of marijuana allows for no exceptions.

5) Describe the historical development of the apothecary, the first hospital-based pharmacy, and the first drug store operated by a registered pharmacist.

Answer: German King Frederic II of Germany ordered that the physicians and apothecaries be two separate professions. The first apothecary shop was established in Iraq in 754 AD. In the United States, the first apothecary shop was established in 1729, the first hospital-based pharmacy in 1751, and the first drug store operated by a registered pharmacist in 1823.

6) Describe the two ways that the FDA currently regulates the use of the drug thalidomide that caused seal-limb deformity in unborn children.

Answer: The FDA regulates the use of thalidomide in two ways: (1) by limiting the number of physicians who can prescribe it and (2) by requiring women taking the drug not to have sexual intercourse or to use two forms of birth control (so that there is no risk of them giving birth to a child with phocomelia).

7) Describe 3 ways in which schedule drugs can be secured in a hospital or physician's office.

Answer: For security, schedule drugs are stored separately from other drugs and are kept in a double-locked box or cabinet in the physician's office or on the nursing unit in the hospital. Access is restricted to those healthcare professionals who are licensed to handle controlled substances. Many facilities use an automated controlled substances device that dispenses and counts all controlled substances. Facilities that do not use an automated device must keep a log for each schedule drug. Any drug that is wasted or not actually administered to the patient must be accounted for and noted on the log. At the end of each nursing shift or each day, the log is independently verified as accurate by two healthcare professionals who are licensed to handle controlled substances. Discrepancies in the count of a controlled substance are investigated immediately.

8) What are the three arguments made by those who oppose reclassification of prescription drugs to become over-the-counter drugs.

Answer: Opponents to reclassification have these arguments: (1) consumers may actually pay more because health insurance plans will not reimburse for OTC drug purchases, (2) excessive use of OTC drugs may increase the number of adverse drug-drug interactions, and (3) consumers may try to self-medicate serious illnesses instead of visiting their physicians for appropriate treatment.