Chapter 01: Medications
Mizner: Mosby's Pharmacy Technician Exam Review, 4th Edition

MULTIPLE CHOICE

1. Which reference book lists biological products including any biosimilar and interchangeable biological product licensed by the Food and Drug Administration?
   a. *Purple Book*
   b. *Red Book*
   c. Safety Data Sheets
   d. USP-NF

   ANS: A
   The *Purple Book* lists biological products including any biosimilar and interchangeable biological product licensed by the Food and Drug Administration. The *Red Book* addresses drug pricing. Safety Data Sheets contain information on the potential hazards for chemical products. The USP-NF contains standards for chemical and biological substances, dosage forms, compounded preparations, excipient, medical devices, and dietary supplements.

   DIF: Cognitive Level 1: Knowledge REF: p.11

2. A patient takes pseudoephedrine (Sudafed) for nasal congestion; however, the patient has high blood pressure. This would be considered a drug–____ interaction.
   a. food
   b. disease
   c. laboratory
   d. nutrient

   ANS: B
   Pseudoephedrine (Sudafed) can increase the heart rate and would not be recommended for patients with high blood pressure; therefore, this combination would represent a drug–disease interaction.

   DIF: Cognitive Level 1: Knowledge REF: p.11

3. A patient overdoses on an opiate, and naloxone (Narcan) is given as an antidote to combat the effects of the opiate. Naloxone would then be considered a(n):
   a. antagonist.
   b. agonist.
   c. sympathomimetic.
   d. anxiolytic.

   ANS: A
   Antagonists can block the effects of another drug. Agonists affect the receptors and activate them. A sympathomimetic mimics the sympathetic nervous system, and anxiolytics stop anxiety symptoms.

   DIF: Cognitive Level 3: Application REF: p.12

4. Augmentin is a combination of amoxicillin and clavulanic acid. Clavulanic acid prevents the degradation of amoxicillin by β-lactamases. Clavulanic acid thus serves to ____ the effects of amoxicillin.
   a. denature
   b. degrade
   c. reduce
   d. potentiate

   ANS: D
   Clavulanic acid increases or potentiates the effect of amoxicillin against bacteria, β-lactamases, or enzymes that can degrade amoxicillin. All of the other choices indicate that clavulanate reduces the effectiveness of amoxicillin, which is not correct.

   DIF: Cognitive Level 3: Application REF: p.61

5. When two drugs are combined and said to be "synergistic," these drugs together would be ____ effective.
   a. less
   b. more
   c. just as
   d. none of these

   ANS: B
   When something is synergistic, there is more effectiveness from the combination of the products.

   DIF: Cognitive Level 1: Knowledge REF: p.12

6. Which of the pharmacokinetic processes is matched correctly with its definition?
   a. Absorption: the means by which the drug travels from the circulatory system across barrier membranes to the site of action.
   b. Distribution: the process by which a drug is removed from the body.
   c. Metabolism: the process involving the conversion of active drugs to a compound that can be easily removed or the conversion of prodrugs to active drugs.
   d. Elimination: the manner by which drug molecules travel from the site of administration, across cell membranes, and into the circulatory system.

   ANS: C
   Absorption is the manner by which drug molecules travel from the site of administration, across cell membranes, and into the circulatory system. Distribution is the means by which the drug travels from the circulatory system across barrier membranes to the site of action. Metabolism is the process involving the conversion of active drugs to a compound that can be easily removed or the conversion of prodrugs to active drugs. Elimination is the process by which a drug is removed from the body.

   DIF: Cognitive Level 1: Knowledge REF: p.10

7. Which of the following is the best definition for a brand name?
   a. Assigned by the drug manufacturer and is protected through a patent
   b. Determined by chemical structure of the drug entity
   c. Assigned to a medication and contains a word stem that has been issued by the U.S. Adopted Names Council

d. Determined by the botanical origin of the drug entity

ANS: A
A proprietary, brand, or trade name is assigned by the drug manufacturer and is protected through a patent. The chemical name is determined by chemical structure of the drug entity, and the nonproprietary (generic) name is assigned to a medication and contains a word stem that has been issued by the U.S. Adopted Names Council.

DIF: Cognitive Level 1: Knowledge REF: p.15

8. Which of the following is the best definition for a generic name?
   a. Assigned by the drug manufacturer and is protected through a patent
   b. Determined by chemical structure of the drug entity
   c. Assigned to a medication and contains a word stem that has been issued by the U.S. Adopted Names Council
   d. Determined by the botanical origin of the drug entity

   ANS: C
   A proprietary, brand, or trade name is assigned by the drug manufacturer and is protected through a patent. The chemical name is determined by chemical structure of the drug entity, and the nonproprietary (generic) name is assigned to a medication and contains a word stem that has been issued by the U.S. Adopted Names Council.

   DIF: Cognitive Level 1: Knowledge REF: p.15

9. Suffixes are often useful in determining the drug class of a medication. Which of the following suffixes is correctly matched to its drug class?
   a. -prazole: Proton pump inhibitor for acidic conditions
   b. -vastatin: H_2 blocker for acidic conditions
   c. -pril: Cholesterol-lowering medication
   d. -tidine: ACE inhibitor

   ANS: A
   The following drug suffixes are matched to their drug classes:
   -prazole: Proton pump inhibitor for acidic conditions
   -vastatin: Cholesterol-lowering medication
   -pril: ACE inhibitor
   -tidine: H_2 blocker for acidic conditions

   DIF: Cognitive Level 1: Knowledge REF: p.15

10. Ranitidine (Zantac) and loratadine (Claritin) have very similar suffixes, yet are very different in their pharmacologic function. What is the difference?
    a. Both are antihistamines, but one affects acid and the other allergies.
    b. Loratadine (Claritin) is for acidic conditions, and ranitidine (Zantac) is for allergic conditions.
    c. Ranitidine (Zantac) is nonsedating, but loratadine (Claritin) is very sedating.
    d. Both are antihistamines, and there is no difference in their effects.

    ANS: A
    Whereas ranitidine (Zantac) is an H_2 blocker that reduces stomach acid, loratadine (Claritin) is an H_1 blocker that alleviates allergy symptoms. Loratadine is nonsedating.

DIF: Cognitive Level 3: Application REF: p.52

11. All the following are ways a patient might distinguish the classes of the medications nystatin (Mycostatin) and atorvastatin (Lipitor) EXCEPT _____.
    a. both have the ending –statin.
    b. the ending that indicates cholesterol lowering is -vastatin, to which nystatin does not conform.
    c. myco- is a prefix that means fungus.
    d. lipi- is one letter short of lipid, and cholesterol is a type of lipid.

    ANS: A
    Although Lipitor is often referred to as a "statin," both drugs have the same suffix yet are for very different conditions. By using -vastatin as the baseline or the prefixes myco- or lipi-, one can determine the medication's class.

    DIF: Cognitive Level 3: Application REF: p.15

12. Which of the following drug interactions is correctly matched to its definition?
    a. Addition: The combined effect of two drugs; it is equal to the sum of the effects of each drug taken alone
    b. Antagonism: The joint action of drugs in which their combined effect is more intense or longer in duration than the sum of the effects of two drugs
    c. Potentiation: One drug works against the action of another drug
    d. Synergism: One drug increases or prolongs the effect of another drug; the total effect is greater than the sum of the effects of each drug alone

    ANS: A
    The definitions below are correctly matched:
    Addition: The combined effect of two drugs; it is equal to the sum of the effects of each drug taken alone
    Antagonism: One drug works against the action of another drug
    Potentiation: One drug increases or prolongs the effect of another drug; the total effect is greater than the sum of the effects of each drug alone (e.g., Vistaril and Demerol)
    Synergism: The joint action of drugs in which their combined effect is more intense or longer in duration than the sum of the effects of two drugs

    DIF: Cognitive Level 1: Knowledge REF: p.12

13. Prefixes are often useful in determining the drug class of a medication. Which of the following prefixes is correctly matched to its drug class?
    a. sulfa-: sulfonamide antibiotic
    b. ceph- or cef-: estrogen
    c. estr-: cephalosporin antibiotic
    d. profen-: antiinflammatory

    ANS: A
    The following drug prefixes are matched to their drug classes:
    sulfa-: sulfonamide antibiotic
    ceph- or cef-: cephalosporin antibiotic
    estr-: estrogen
    Although -profen would be matched correctly to an antiinflammatory, it is a suffix, not a prefix.

DIF: Cognitive Level 1: Knowledge REF: p.15

14. Which of the following mechanisms of action is correctly matched to its antibiotic class?
    a. Penicillins prevent bacteria from forming a cell wall.
    b. Sulfonamides inhibit protein synthesis in bacteria by binding ribosomes.
    c. Cephalosporins interfere with folic acid formation.
    d. Tetracyclines prevent bacteria from forming a cell wall.

    ANS: A
    The following mechanisms of action are correctly matched to their antibiotic classes:
    Penicillins prevent bacteria from forming a cell wall.
    Sulfonamides interfere with folic acid formation.
    Cephalosporins prevent bacteria from forming a cell wall.
    Tetracyclines inhibit protein synthesis in bacteria by binding ribosomes.

    DIF: Cognitive Level 1: Knowledge REF: p.61

15. Which of the following mechanisms of action is correctly matched to its antibiotic class?
    a. Penicillins inhibit protein synthesis in bacteria by binding ribosomes.
    b. Macrolides inhibit protein synthesis by interacting with ribosomes.
    c. Cephalosporins interfere with folic acid formation.
    d. Tetracyclines prevent bacteria from forming a cell wall.

    ANS: B
    The following mechanisms of action are correctly matched to their antibiotic classes:
    Penicillins prevent bacteria from forming a cell wall.
    Macrolides inhibit protein synthesis by interacting with ribosomes.
    Sulfonamides interfere with folic acid formation.
    Tetracyclines inhibit protein synthesis in bacteria by binding ribosomes.

    DIF: Cognitive Level 1: Knowledge REF: p.62

16. Which is the proper sequence for the pharmacokinetic processes?
    a. Absorption, metabolism, distribution and elimination
    b. Absorption, elimination, metabolism and distribution
    c. Absorption, distribution, elimination and metabolism
    d. Absorption, distribution, metabolism and elimination

    ANS: D
    Absorption, distribution, metabolism and elimination is the proper sequence for the pharmokinetic processes.

    DIF: Cognitive Level 3: Application REF: p.10

17. In looking at erythromycin and azithromycin, two macrolides, what improvement does azithromycin have in terms of patient compliance?
    a. It comes in a suspension.
    b. It has once-daily dosing.
    c. It comes in a solid dosage form.
    d. Azithromycin has no advantage over erythromycin.

    ANS: B

Azithromycin only needs to be taken once a day as opposed to two to four times daily for erythromycin. This improves patient compliance. Both products are available as solid and liquid dosage forms.

DIF: Cognitive Level 3: Application REF: p.62

18. A physician orders a quinolone antibiotic. The generic name of the medication would most likely end in _____.
    a. -floxacin
    b. -cillin
    c. -mycin
    d. -cycline

    ANS: A
    Ciprofloxacin (Cipro) is a representative of the quinolone class of antibiotics; -cillin, -mycin, and -cycline represent penicillins, macrolides, and tetracyclines, respectively.

    DIF: Cognitive Level 1: Knowledge REF: p.63

19. A patient is being changed from a quinolone antibiotic to a macrolide antibiotic. What will the suffix of the new medication likely be?
    a. -floxacin
    b. -cillin
    c. -mycin
    d. -cycline

    ANS: C
    Azithromycin, clarithromycin, and erythromycin all represent macrolide antibiotics. The suffixes -floxacin, -cillin, and -cycline represent quinolones, penicillins, and tetracyclines, respectively.

    DIF: Cognitive Level 1: Knowledge REF: p.63

20. A patient is cautioned that the medication she was prescribed might cause nephrotoxicity, ototoxicity, tinnitus, and even permanent deafness. What class of antibiotic was this patient likely prescribed?
    a. Aminoglycoside
    b. Quinolone
    c. Penicillin
    d. Tetracycline

    ANS: A
    Possible adverse effects of the aminoglycosides are nephrotoxicity, ototoxicity, tinnitus, and even permanent deafness.

    DIF: Cognitive Level 1: Knowledge REF: p.63

21. A patient takes an antibiotic medication and exhibits a cross-sensitivity to his previous penicillin allergy. What nonpenicillin class of antibiotics was the patient likely given?
    a. Sulfonamide
    b. Macrolide
    c. Tetracycline
    d. Cephalosporin

ANS: D
Cephalosporins exhibit cross-sensitivity with penicillin-type antibiotics allergy.

DIF: Cognitive Level 1: Knowledge REF: p.62

22. A patient is diagnosed with a fungal infection. Which medication would not be prescribed for this indication?
    a. amphotericin
    b. nystatin
    c. fluconazole
    d. levofloxacin

ANS: D
Levofloxacin is an antibiotic prescribed for bacterial infections; the other choices are antifungals.

DIF: Cognitive Level 3: Application REF: p.63

23. A patient is diagnosed with a viral infection. Which medication would not be prescribed for this indication?
    a. tetracycline
    b. acyclovir
    c. famciclovir
    d. oseltamivir

ANS: A
Tetracycline is an antibiotic prescribed for bacterial infections; the other choices are antivirals. Antivirals sometimes (but not always) have the root -vir in the name.

DIF: Cognitive Level 3: Application REF: p.62

24. Which of the following is not a medication used in the treatment of the HIV retrovirus?
    a. acyclovir
    b. abacavir
    c. didanosine
    d. denofovir

ANS: A
Acyclovir (Zovirax) would likely be used in zoster infections such as herpes or shingles. The other choices would be used to combat HIV.

DIF: Cognitive Level 3: Application REF: p.66

25. Which of the following is not a class of HIV medication therapy?
    a. Protease inhibitors
    b. Fusion inhibitors
    c. Antiprotozoals
    d. Non-nucleoside reverse transcriptase inhibitors (NNRTIs)

ANS: C
Antiprotozoals would not be effective against HIV infection.

DIF: Cognitive Level 3: Application REF: p.70

26. HIV medications interfere with processes critical to the HIV virus. Which of the following drug classes would likely interfere with an enzyme?
    a. Fusion inhibitors
    b. Non-nucleoside reverse transcriptase inhibitors (NNRTIs)
    c. Protease inhibitors
    d. Both NNRTIs and protease inhibitors

    ANS: D
    Both NNRTIs and protease inhibitors include the root -ase in their names, indicating these medications interfere with an enzyme.

    DIF: Cognitive Level 3: Application REF: p.68

27. Often patients confuse the need for a decongestant with an antihistamine for their cold symptoms. Which of the following represents a decongestant?
    a. diphenhydramine
    b. pseudoephedrine
    c. loratadine
    d. azelastine

    ANS: B
    Only pseudoephedrine is a decongestant; the other choices represent antihistamines.

    DIF: Cognitive Level 3: Application REF: p.43

28. A patient comes into the pharmacy complaining of congestion and sneezing. Which of the following combination products would be appropriate for these symptoms?
    a. cetirizine and pseudoephedrine
    b. chlorpheniramine and hydrocodone
    c. guaifenesin and codeine
    d. promethazine and codeine

    ANS: A
    Cetirizine and pseudoephedrine represent an antihistamine and decongestant preparation that would be appropriate for the patient's symptoms. The other choices all include an antitussive, and the patient did not complain of cough.

    DIF: Cognitive Level 3: Application REF: p.43

29. A patient has anxiety. Which medication would likely be prescribed for this condition?
    a. alprazolam
    b. diphenhydramine
    c. codeine
    d. levofloxacin

    ANS: A
    Alprazolam (Xanax) is an antianxiety agent. The other choices would be inappropriate.

    DIF: Cognitive Level 1: Knowledge REF: p.16

30. Which of the following medications is NOT an SSRI antidepressant?
    a. paroxetine

b. alprazolam
c. sertraline
d. citalopram

ANS: B
Alprazolam is an antianxiety medication; the other three choices (paroxetine, sertraline, and citalopram) represent SSRIs, or selective serotonin reuptake inhibitors.

DIF: Cognitive Level 1: Knowledge REF: p.16

31. A stored temperature above 40°C would be considered _____.
a. room temperature and safe for most medications
b. excessive heat and potentially damaging to medications
c. cool and appropriate for most medications
d. cold and appropriate for frozen medications

ANS: B
Excessive heat includes temperatures above 40°C (104°F). Be careful when determining the safety of a particular temperature; what may seem like a safe temperature in Fahrenheit degrees may be unsafe in Celsius degrees.

DIF: Cognitive Level 1: Knowledge REF: p.86

32. Which of the following incompatibilities would be most aptly described as therapeutic incompatibility?
a. The presence of light may cause deterioration of the ingredients.
b. It occurs because of changes in solubility, which may result in changes in color or the formation of a precipitate.
c. A change in the pH of a solution, the use of buffers, and the type of solvent used may create problems.
d. It occurs because of mixing together of two or more ingredients, resulting in a change in the therapeutic response of the drugs.

ANS: D
A therapeutic incompatibility is the mixing together of two or more ingredients, resulting in a change in the therapeutic response of the drugs. The other options describe physical and chemical incompatibilities.

DIF: Cognitive Level 1: Knowledge REF: p.85

33. A drug–drug interaction is correctly defined as when _____.
a. medications may cause problems if taken together
b. drugs may cause problems with the patient's medical condition
c. drugs may cause problems if taken with specific foods
d. a drug is identified as a drug allergy on the patient record

ANS: A
A drug–drug interaction is when medications may cause problems if taken together. A drug–disease interaction is when drugs may cause problems with the patient's medical condition. A drug–food interaction is when drugs may cause problems if taken with specific foods. A drug–allergy interaction is identified when a patient is prescribed a drug that matches a drug allergy in the patient record.

DIF: Cognitive Level 1: Knowledge REF: p.12

34. If a patient's pulse rate is below 60 beats/min, the patient is deemed to be bradycardic. One would expect that this condition is one when the heart is _____.
    a. beating faster than the normal range
    b. beating at a normal pace
    c. beating slower than the normal range
    d. not beating at all

    ANS: C
    The root card- indicates that the heart is involved in the word, and brady- indicates slower than. Tachycardia is a condition when a heart beats faster than the normal range (greater than 100 beats/min).

    DIF: Cognitive Level 3: Application REF: p.26

35. A patient with hypertension is diagnosed with chronic obstructive pulmonary disease. Which of the following medications is contraindicated for this patient?
    a. albuterol
    b. beclomethasone
    c. montelukast
    d. cromolyn

    ANS: A
    Albuterol is a bronchodilator indicated for chronic obstructive pulmonary disease but is contraindicated in patients with hypertension. Beclomethasone is a glucocorticoid, montelukast is a leukotriene inhibitor, and cromolyn is a mast cell stabilizer; all three are indicated for chronic obstructive pulmonary disease and are not contraindicated in patients with hypertension.

    DIF: Cognitive Level 1: Knowledge REF: p.38

36. Which of the following drug classifications is indicated in the treatment of depression?
    a. ARBs
    b. COX-2
    c. NSAID
    d. SNRI

    ANS: D
    Serotonin norepinephrine reuptake inhibitors (SNRIs) are indicated for depression. Angiotensin II receptor antagonists (ARBs) are used in treating hypertension and congestive heart failure. Cyclooxcygenase-2 inhibitors (COX-2) inhibitors are indicated for rheumatoid arthritis and osteoarthritis. Nonsteroidal antiinflammatory drugs (NSAIDs) are indicated for conditions for which antipyretic, analgesic, and antiinflammatory agents are prescribed.

    DIF: Cognitive Level 1: Knowledge REF: p.17

37. HIV is caused by which type of microorganism?
    a. Bacterial
    b. Fungal
    c. Protozoal
    d. Viral

ANS: D
HIV is caused by a virus.

DIF: Cognitive Level 1: Knowledge REF: p.60

38. A patient has been diagnosed for multiple chronic conditions and is being treated with acetaminophen, lisinopril, losartan, and furosemide. Which medication may increase his or her blood glucose levels?
a. acetaminophen
b. furosemide
c. lisinopril
d. losartan

ANS: B
Diuretics such as furosemide may increase an individual's blood glucose level. Lisinopril (angiotensin-converting enzyme inhibitor) and losartan (angiotensin II receptor blocker) may decrease a patient's blood glucose level. Acetaminophen does not have any effect on an individual's blood glucose.

DIF: Cognitive Level 3: Application REF: p.82

39. A patient is diagnosed with insulin-dependent diabetes mellitus. Which of the following medications has an antagonistic effect on insulin?
a. enalapril
b. hydrochlorothiazide
c. pyridoxine
d. warfarin

ANS: B
Hydrochlorothiazide (thiazide diuretic) has an antagonistic effect with insulin. Enalapril (an angiotensin-converting enzyme inhibitor), pyridoxine, and warfarin (an oral anticoagulant) may potentiate the effect of insulin.

DIF: Cognitive Level 1: Knowledge REF: p.36

40. A patient has been prescribed glyburide for type 2 diabetes. In addition, the patient is taking metoprolol, phenytoin, prednisone, and verapamil. Which of these medications will potentiate the effect of the glyburide?
a. metoprolol
b. phenytoin
c. prednisone
d. verapamil

ANS: C
Prednisone is a corticosteroid which will potentiate the effect of glyburide (a second generation sulfonylurea). Metoprolol (an adrenergic-blocking agent), verapamil (a calcium channel blocker), and phenytoin are sulfonylurea antagonists.

DIF: Cognitive Level 3: Application REF: p.39

41. Which of the following medications is a non-controlled substance indicated for diarrhea?
a. Aciphex
b. Imuran