



The Pharmacy Examining Board of Canada

Le Bureau des examinateurs en pharmacie du Canada

Pharmacist Qualifying Examination - Part I (MCQ) - Sample Questions

The sample questions that follow are **NOT** intended or designed to be a sample exam and do **NOT** represent an exact model of the Pharmacist Qualifying Examination-Part I, in terms of difficulty and proportion of topics. However, **individually, these examples are intended to be representative in format and phrasing style** of the types of questions found in the Qualifying Examination-Part I. They also illustrate a variety of the competency areas contained in the exam blueprint. Please note that, although these questions are reviewed and updated annually to ensure currency of content, if guidelines or legislation change in the interim, the answers may not be accurate.

[Click here](#) for the answers to the sample questions.

COMPETENCY 1: Ethical, Legal and Professional Responsibilities

1. According to the Narcotic Control Regulations of the Controlled Drugs and Substances Act, which of the following practitioners may prescribe narcotic drugs?

- a. Midwives
- b. Chiropractors
- c. Osteopaths
- d. Pharmacists

2. A staff pharmacist, who has conscientious objections to providing emergency contraception, is on duty alone when a patient comes in requesting levonorgestrel (Plan B[®]). The most appropriate response for the pharmacist, which is in keeping with the pharmacist's beliefs and with the pharmacist's responsibility to the patient, is to:

- a. refer the patient to a walk-in clinic for a medical assessment before providing the medication.
- b. put the needs of the patient first and provide the medication on a "once but not again" basis.
- c. put the needs of the patient first, provide the medication and suppress one's personal moral objections.
- d. tell the patient that the pharmacist cannot provide the medication and direct the patient to a nearby pharmacy that can help her.

3. A pharmaceutical manufacturer of nonprescription cough and cold products offers to pay a pharmacy a fee to host a cough and cold information display and Q&A session. Which of the following strategies will optimally reduce conflict of interest in this situation?

- a. The display only features the manufacturer's products that are evidence-based.
- b. The session personnel do not specifically recommend any of the manufacturer's products.
- c. The pharmacy does not receive any financial gain for offering the session on cough and cold products.
- d. The pharmacist employee supervising the session volunteers his time and is not paid by the pharmacy.

4. According to federal legislation, which of the following medications requires witnessed destruction in a pharmacy?

- a. Ketamine
- b. Duloxetine
- c. Galantamine
- d. Topiramate

5. KP presents to the pharmacy with a new prescription for Drug X. The pharmacist identifies that Drug X has the potential to interact with another medication that KP is taking and contacts the prescriber. The prescriber provides rationale for using the two agents at the same time. The pharmacist and physician agree upon appropriate follow-up measures over the next several days. Which of the following statements is correct regarding documentation of the pharmacist's encounter with the physician? The encounter:

- a. does not need to be documented, as no changes were made to the prescription and the pharmacist has determined it is appropriate to dispense the medication.
- b. should not be documented, as documentation poses the risk of increasing the prescriber's liability if an adverse event occurs.
- c. should be documented in the patient's pharmacy profile and the patient should be provided with a copy of the note to reduce the pharmacist's liability.
- d. should be documented in the patient's pharmacy profile, with a description of the monitoring plan.

6. According to federal legislation, which of the following examples shows a legally correct refill designation on a written prescription for dexamphetamine?

- a. Repeat twice
- b. Repeat monthly
- c. Repeat twice as required
- d. Repeat twice at 14 day intervals

7. According to the Benzodiazepine and Other Targeted Substances Regulations, what is the expiry date for refilling a prescription for lorazepam?

- a. Six months from the date written
- b. Six months from the date originally filled
- c. One year from the date written
- d. One year from the date originally filled

8. Which of the following pharmaceuticals is regulated federally under the Precursor Control Regulations of the Controlled Drugs and Substances Act, as a precursor chemical for illicit drug use?

- a. Dextromethorphan
- b. Dimenhydrinate
- c. Diazepam
- d. Pseudoephedrine

9. For a drug undergoing research and development processes in Canada, which of the following statements is correct?

- a. Application for patent protection is granted for a maximum period of three years.
- b. A New Drug Submission must be filed in order to start clinical trials.
- c. Clinical trials involve three phases that assess animal safety and efficacy.
- d. Health Canada, under the Food & Drugs Act & Regulations, provides Notice of Compliance.

10. Which of the following is the national voluntary organization for advocacy of pharmacists and patient care?

- a. Canadian Pharmacists Association
- b. Canadian Patient Safety Institute
- c. Institute for Safe Medication Practices
- d. National Association of Pharmacy Regulatory Authorities

11. According to Health Canada, a pharmacist administering a vaccine must document which of the following information in the patient's record of vaccination?

- a. Date of birth
- b. List of other medications
- c. Post-immunization adverse effects
- d. Drug allergies

12. Which of the following represents the greatest conflict of interest on the part of a pharmacist?

- a. Accepting free training products/devices from a pharmaceutical representative
- b. Sharing prescription profits with physicians who recommend the pharmacy to their patients
- c. Returning expired products to the manufacturer in exchange for new stock
- d. Attending an educational session where refreshments are provided by a pharmaceutical manufacturer

COMPETENCY 2: Patient Care

13. RY is an 85 year old male who lives alone and currently takes 12 different medications. For the past two weeks he has telephoned to ask the pharmacist what dose of diuretic he should be taking (this medication looks similar to another tablet that he takes). He calls again today with the same question. After answering his question, the most appropriate pharmacist action should be to:

- a. call RY's family doctor to suggest changing the diuretic to something that looks different.
- b. suggest that RY have the labels on his prescription bottles changed to a bigger font for easier reading.
- c. recommend that the pharmacy use a blister packaging dosette to dispense RY's medications.
- d. suggest that RY write down the answer to his question so that he does not need to phone again.

14. JQ is a 67 year old male with type 2 diabetes that is controlled with insulin. Today, JQ's wife calls the pharmacist to inquire what to do regarding JQ's very low blood glucose reading (2.8 mmol/L). She also notes that he seems to be confused. JQ's wife should be instructed to:

- a. take JQ immediately to the nearest Emergency Department.
- b. have JQ eat a carbohydrate-rich meal and retest in one hour.
- c. give JQ a 15-20 gram glucose supplement and retest in 15 minutes.
- d. retest JQ's blood glucose level in one hour and phone back if it remains low.

15. RF is an 80 year old female who developed CDAD (*Clostridium difficile*-associated diarrhea) after recent treatment of a urinary tract infection with ciprofloxacin. She is admitted to hospital with severe symptoms including profound diarrhea (eight watery bowel movements per day), severe abdominal pain, fever (39°C), and confusion. Based on her symptoms, which of the following is the most appropriate therapy choice for her?

- a. Oral fidaxomicin
- b. Oral metronidazole plus intravenous vancomycin
- c. Oral cholestyramine
- d. Oral vancomycin plus intravenous metronidazole

16. CC, a 72 year old female, complains to the pharmacist that her stomach has been bothering her recently. Current medications include: levothyroxine 100 mcg po daily (x 30 years), acetaminophen 500 mg po qid (x 5 months), atorvastatin 40 mg po at bedtime (x 4 years), ibuprofen 400 mg po tid prn for joint pain (x 2 months) and zopiclone 3.75 mg po at bedtime prn (x 3 months). Which of the following drug therapy problems is most likely contributing to CC's recent symptoms?

- a. Too high a dosage of atorvastatin
- b. Too high a dosage of zopiclone
- c. Use of ibuprofen without gastroprotection
- d. Drug interaction between atorvastatin and zopiclone

17. AM has been taking bupropion XL 300 mg po daily for four months for the treatment of depression and reports to the pharmacist that he is not experiencing any improvement in his symptoms. After the pharmacist consults with the prescriber, it is decided to change his medication to citalopram 20 mg po daily. Which of the following is the recommended method for making this switch in antidepressant therapy?

- a. Stop bupropion and start citalopram 20 mg daily the next day
- b. Stop bupropion and wait seven days before starting citalopram 20 mg daily
- c. Taper bupropion over seven days and then start citalopram 20 mg daily
- d. Start citalopram 20 mg daily and then taper bupropion dose over seven days

18. The pharmacist fills a prescription for sumatriptan 100 mg tablets for a patient with migraine. Appropriate information to provide to the patient includes which of the following?

- a. If the sumatriptan does not relieve the headache within four hours, ergotamine may be used.
- b. If no relief is achieved in two hours, a dose of 200 mg should be taken.
- c. If the headache returns, a dose of 100 mg can be repeated two hours after the first dose.
- d. The maximum dosage of sumatriptan 100 mg in any 24-hour period is six tablets.

19. JG has been taking metoclopramide 10 mg po q6h for the past three days as part of her chemotherapy regimen. She normally takes four doses daily, 30 minutes prior to meals and at bedtime. This morning, she forgot to take her morning dose before leaving home for a hospital check-up. When she arrives at the clinic, she asks the pharmacist what she should do about her missed dose, as she expects to be home again around 11:00 am. The pharmacist should advise JG to:

- a. take the missed dose immediately when she gets home and continue as scheduled.
- b. take two doses at lunchtime to make up for the missed dose.
- c. skip the missed dose and take the next scheduled dose at lunchtime.
- d. space four doses into the remaining hours between when JG gets home and her bedtime.

20. EK is a 25 year old female who presents to the pharmacy requesting Plan B® (levonorgestrel) for emergency contraception following an episode of unprotected sex 12 hours ago. After speaking with EK, the pharmacist decides she is a good candidate to receive Plan B®. The pharmacist should include which of the following counselling information for EK?

- a. Take one tablet daily for three consecutive days.
- b. A pregnancy test should be done five days after completing Plan B®.
- c. Plan B® will protect EK from pregnancy due to unprotected intercourse until her next menses.
- d. EK may experience spotting a few days after taking Plan B®.

21. Following a pharmacist's interview of a patient seen in an asthma clinic, which of the following findings should be documented in the "plan" section of the SOAP format notes?

- a. Nocturnal symptoms
- b. Pulmonary test results
- c. Dyspnea on exertion
- d. Review of inhaler technique at next visit

22. For a child with asthma, which of the following factors is an indicator of poor control?

- a. Number of colds experienced each year
- b. Need for use of a spacer device with inhalers
- c. Awakening at night with asthma symptoms
- d. Keeping one canister of salbutamol at home and one at school

23. Which of the following pathogens is most commonly implicated in acute bacterial rhinosinusitis?

- a. *E. coli*
- b. *S. aureus*
- c. *S. pneumoniae*
- d. *N. meningitidis*

24. DC, a 57 year old female, receives a prescription for celecoxib 100 mg po bid for osteoarthritis in her knees and hands. DC's only current medication is acetaminophen 650 mg po tid prn for joint pain. She enjoys a glass of wine with dinner and is a non-smoker. DC is otherwise healthy. Which of the following best represents the pharmacist's assessment of DC's new therapy?

- a. DC should discontinue acetaminophen with celecoxib use.
- b. DC should discontinue her wine consumption with celecoxib use.
- c. DC requires concurrent cytoprotection with celecoxib use.
- d. DC has no current drug therapy problems.

25. BG, a 45 year old male with type 1 diabetes mellitus, is currently using a premixed 30/70 combination of regular and intermediate-acting insulin subcut bid (before breakfast and supper). The following blood glucose values are observed:

- 5.8 mmol/L at 2200 h
- 3.6 mmol/L at 0300 h
- 10.2 mmol/L at 0800 h (two hours after breakfast)

Which of the following is the most appropriate initial adjustment for BG's insulin regimen?

- a. Decrease the supertime insulin dose.
- b. Increase the supertime insulin dose.
- c. Decrease the breakfast time insulin dose.
- d. Increase the breakfast time insulin dose.

26. For a patient who receives a chemotherapy regimen containing cisplatin, which of the following is a significant adverse effect of cisplatin?

- a. Ototoxicity
- b. Hepatotoxicity
- c. Photosensitivity
- d. Pulmonary fibrosis

27. Cyclosporine is known to inhibit cytochrome P450 isoenzyme 3A4. Which of the following medications could have elevated serum concentrations due to inhibition of metabolism by concurrent cyclosporine?

- a. Amoxicillin
- b. Atorvastatin
- c. Metoprolol
- d. Levothyroxine

28. FR is a 70 year old female client who presents to the pharmacist, complaining of nausea, diarrhea, and dizziness for the past three days. Her medication profile includes: ASA, digoxin, enalapril, and amiodarone. She denies any recent diet changes and the only change to her medications was the addition of amiodarone last week. She believes she must have picked up a “stomach bug” and would like something for symptom relief. The most appropriate pharmacist recommendation for FR is to:

- a. take loperamide and dimenhydrinate for symptom relief.
- b. take increased fluids and bed rest until the symptoms resolve.
- c. contact FR’s physician to discontinue amiodarone until these symptoms resolve.
- d. contact FR’s physician to suggest that a digoxin level be taken.

29. FD, a 58 year old male with hypertension, asks the pharmacist if cranberry juice would be useful for his current symptoms, which include frequency and a large volume of urine, but no urgency, or painful urination. Further questioning reveals that for the past two months he has also experienced polydipsia and polyphagia. The pharmacist should refer FD to his physician because these symptoms are consistent with:

- a. a urinary tract infection.
- b. prostate hyperplasia.
- c. diabetes mellitus.
- d. renal complications of hypertension.

30. DS is a 27 year old male who comes to the pharmacy seeking advice because, for the past 24 hours, he has experienced abdominal cramping, mild fever and frequent, loose stools with some blood loss. DS thinks it may be related to the antibiotic he has been taking for a dental abscess. Current medications include: clindamycin 150 mg po qid x 10 days, started eight days ago, and losartan 25 mg po daily for hypertension, started three months ago. The most appropriate pharmacist response is that these symptoms:

- a. are expected, transient side effects of clindamycin; treat symptoms and continue medications.
- b. may indicate an interaction between clindamycin and losartan; pharmacist call to dentist is warranted.
- c. may indicate clindamycin-related pseudomembranous colitis; seek immediate medical attention.
- d. are probably unrelated to DS’s medications; treat for flu symptoms and follow up if no improvement.

31. Following the measurement of high amounts of free cortisol in the urine of a patient, a confirmatory test for the diagnosis of Cushing's syndrome is a test for normal cortisol suppression, through the administration of:

- a. budesonide.
- b. triamcinolone acetonide.
- c. prednisolone.
- d. dexamethasone.

32. For patients with a previous history of gastric ulcers who require ASA daily for stroke prophylaxis, which of the following is the most effective management strategy?

- a. Concurrent use of an H₂ antagonist
- b. Use of an enteric-coated product
- c. Reduction of the dose of ASA to every other day
- d. Screening and eradication of *H. pylori*

33. CY is a 58 year old female who has heart failure (NYHA III). Her physician wants CY to start therapy with spironolactone or eplerenone. Which of the following adverse effects is found significantly more often with spironolactone than with eplerenone?

- a. Bradycardia
- b. Gynecomastia
- c. Hyperkalemia
- d. Prolonged QT interval

34. Which of the following medications is most likely to cause drug-induced leg cramps?

- a. Lithium
- b. Citalopram
- c. Alprazolam
- d. Zopiclone

35. When assessing a patient with a localized purulent cellulitis, which of the following indicates that antibiotics active against MRSA are required?

- a. Presence of a drainable abscess
- b. Concomitant immunosuppressive therapy
- c. History of alcohol misuse
- d. History of beta-lactam intolerance

36. CV is a 68 year old female with hypertension, type 2 diabetes, and COPD. She has a documented allergy to sulfonamides (rash all over body). CV takes the following medications:

- Bisoprolol 2.5 mg po daily
- Perindopril 8 mg po daily
- Rosuvastatin 20 mg po at bedtime
- Metformin 850 mg po bid
- Empagliflozin 10 mg po daily
- Glycopyrronium 50 mcg by inhalation daily
- Indacaterol 75 mcg by inhalation daily

CV was recently admitted to hospital for a NSTEMI and underwent coronary artery bypass graft (CABG) surgery three days ago. Which of the following antiplatelet regimens is optimal for CV following her CABG?

- a. EC-ASA 325 mg po daily for one month post-CABG; then EC-ASA 80 mg po daily for one year post-CABG
- b. EC-ASA 325 mg po daily for one month post-CABG; then EC-ASA 80 mg po daily for life-long treatment
- c. Clopidogrel 600 mg po once for one dose; then clopidogrel 75 mg po daily for life-long treatment
- d. EC-ASA 80 mg po daily + clopidogrel 75 mg po daily for one year post-CABG; then EC-ASA 80 mg po daily alone for life-long treatment

37. LT is a 38 year old male who presents to his family health team with symptoms of influenza. The symptoms started 72 hours ago. His past medical history includes asthma and seasonal allergies. LT's medications include: Symbicort® Turbuhaler® (budesonide 200 mcg/formoterol 6 mcg) bid, salbutamol 100 mcg inhaled qid prn, and cetirizine 10 mg po daily prn. He reports that he is experiencing increasing shortness of breath and frequent use of salbutamol. A nasopharyngeal swab is sent for viral PCR. Which of the following anti-infectives is the most appropriate initial therapy for LT?

- a. No anti-infective should be initiated as LT's symptoms have been present for more than 48 hours
- b. Oral amantadine
- c. Oral oseltamivir
- d. Inhaled zanamivir

38. GT is a 59 year old female who has a stressful job that requires her to stand most of the day. She drinks two to three cups of coffee each day. Her medical history includes hypothyroidism, eczema on her face and legs, and muscle pain in her legs. Her current medications include:

- Levothyroxine 100 mcg po daily
- Betamethasone valerate 0.1% ointment bid to body
- Tacrolimus 0.1% ointment once daily on face
- Acetaminophen 500 mg po tid prn

GT reports to the pharmacist that she frequently doesn't sleep well due to the pain in her legs. She moves around in bed to find a comfortable position but can't find one. She has tried diphenhydramine 25 mg po at bedtime for several nights, but it has not helped and she is feeling exhausted most days. Which of the following is an appropriate initial recommendation from the pharmacist?

- a. "Exercise moderately, stretch your legs, and take a warm bath before going to bed"
- b. "Arrange to see your physician as soon as possible for an assessment of your thyroid function"
- c. "Discontinue drinking coffee so that you can sleep better at night"
- d. "Increase your dose of diphenhydramine to 50 mg at bedtime, as that is the effective dose"

39. Which of the following is a rare but serious risk associated with the use tofacitinib in rheumatoid arthritis patients?

- a. Agranulocytosis
- b. Stevens-Johnson syndrome
- c. Torsades de pointes
- d. Thrombosis

COMPETENCY 3: Product Distribution

40. Appropriate auxiliary labelling for clarithromycin suspension includes which of the following?

- a. Shake well before using
- b. Take with plenty of fluids
- c. Avoid prolonged exposure to sunlight
- d. Keep refrigerated

41. A biological safety cabinet would be the best choice for preparing a parenteral formulation of:

- a. alteplase.
- b. doxorubicin.
- c. nitroglycerin.
- d. penicillin.

42. A physician wants to switch a terminally-ill patient from slow release morphine sulphate tablets, 15 mg po twice daily, to a liquid morphine sulphate dosage form because the patient has difficulty in swallowing tablets. If a morphine sulphate solution containing 5 mg per mL is prescribed q4h, what volume should be dispensed for a 20-day supply to provide the same pain relief as the tablet regimen?

- a. 20 mL
- b. 60 mL
- c. 100 mL
- d. 120 mL

43. A patient is currently taking 220 mg of anhydrous zinc sulphate. To receive the equivalent amount of elemental zinc, how many milligrams of zinc sulphate heptahydrate ($\cdot 7 \text{ H}_2\text{O}$) would the patient require? (Molecular weights: zinc 65, ZnSO_4 161, H_2O 18)

- a. 123 mg
- b. 220 mg
- c. 300 mg
- d. 392 mg

44. Given that 30 g of a mild corticosteroid ointment covers the entire surface of any adult for one application, how much ointment (in grams) should be dispensed for an 18 year old patient who requires treatment on approximately 20% of her body with twice daily application for 14 days?

- a. 12 g
- b. 84 g
- c. 124 g
- d. 168 g

45. A patient in an intensive care unit is ordered a dopamine intravenous infusion to start at a rate of 5 mcg/kg/min. If the patient weighs 158 pounds and dopamine is available as a premixed intravenous solution containing 200 mg/250 mL, what is the hourly infusion rate?

- a. 3 mL/h
- b. 9 mL/h
- c. 27 mL/h
- d. 39 mL/h

46. BV is a 62 year old, obese female who visits a walk-in-clinic while her physician is away on vacation. She presents to the pharmacist with the following prescription:

Losec® (omeprazole) 30 mg

M: 30

Sig. i po daily

The pharmacist knows that this product is only available in 10 mg or 20 mg strengths and that BV's profile shows that she was previously on the 20 mg strength of this medication. The most appropriate initial pharmacist response is to:

- a. tell BV that the physician has made a prescribing error.
- b. ask BV why she visited the clinic today and what the physician told her about the prescription.
- c. dispense using omeprazole 10 mg and adjust the quantity and dose accordingly.
- d. assume the prescriber was thinking of Prevacid® (lansoprazole) 30 mg and change the prescription accordingly.

47. A community pharmacy provides prescriptions for elderly patients in a nearby long-term care facility where the nursing staff administer medications. When processing the monthly refills for NR, an 83 year old female resident, the pharmacist notices that NR's lorazepam refills have been ordered several days early on the last two occasions. Which of the following is the most appropriate action for the pharmacist to take?

- a. Ask NR if there has been a dosage change with her lorazepam
- b. Ask the nurse at the residence to check NR's medication administration records
- c. Alert the prescribing physician that NR is taking more lorazepam than prescribed
- d. Report the nursing staff at the residence for a fraudulent diversion of medication

48. A physician asks the pharmacist about obtaining a Special Access Programme (SAP) medication. Which of the following statements is correct regarding accessing medications through SAP?

- a. SAP authorization certifies that the drug is safe and effective.
- b. All SAP medications are provided free of charge to patients.
- c. Medications may be authorized for a maximum duration of three months.
- d. The manufacturer has the final authority on whether to supply the requested drug.

49. Which of the following classes of medications is most likely to be administered by the intravenous piggyback method?

- a. Antibiotics
- b. Opioids
- c. Insulins
- d. Erythropoiesis regulating hormones

50. Which of the following statements is correct regarding compounded sterile preparations (CSPs) in a hospital pharmacy?

- a. Immediate-use CSPs that are intended for urgent use situations have less stringent preparation criteria than other CSPs.
- b. A multi-dose batch of an immediate-use CSP may be prepared for a patient.
- c. A pharmacist must be directly responsible for the labelling of all finished CSPs, even when prepared by trained personnel.
- d. Beyond-use dates are ideally determined by test sampling of the individual CSP batch.

51. Which of the following drug orders is incomplete and requires follow-up with the prescriber?

- a. Zithromax Z-Pak[®] (azithromycin 250 mg), 2 tabs po day 1 and 1 tab po days 2 to 5
- b. Flonase[®] (fluticasone) 100 mcg spray, 1 or 2 sprays in each nostril bid x 1 bottle
- c. Actonel[®] (risedronate), 35 mg po once weekly x 12 tabs
- d. Zocor[®] (simvastatin), 1 tab po hs for 3 months

52. Which of the following factors is most likely to contribute to a widespread shortage of a pharmaceutical product?

- a. Lot recall
- b. Patent expiration
- c. De-listing by provincial drug plans
- d. Lack of raw material

53. Which of the following characteristics is the most important for assessing the bioequivalence of two brands of a pharmaceutical dosage form?

- a. Excipients
- b. Physical appearance
- c. Manufacturing cost
- d. Pharmacokinetic properties

54. Which of the following injectable products requires refrigerated storage?

- a. Gravol[®] (dimenhydrinate)
- b. Enbrel[®] (etanercept)
- c. Imitrex[®] (sumatriptan succinate)
- d. EpiPen[®] (epinephrine)

55. A male patient weighing 165 pounds is brought to the Emergency Room approximately six hours after ingestion of an overdose of acetaminophen. Acetylcysteine IV will be administered according to the following dosing regimen:

Total IV dose = 300 mg/kg given over 20 hours, as follows:

Loading Dose: 150 mg/kg in 250 mL D5W IV given over 15 minutes, followed by:

First infusion: 50 mg/kg in 500 mL D5W IV given over 4 hours, followed by:

Second infusion: 100 mg/kg in 1 L D5W given over 16 hours.

Which of the following represents the correct preparation of the three acetylcysteine IV bags needed for this patient?

- a. Acetylcysteine 2.25 g in 250 mL D5W; 0.2 g in 500 mL D5W; 1.6 g in 1 L D5W
- b. Acetylcysteine 11.25 g in 250 mL D5W; 3.75 g in 500 mL D5W; 7.5 g in 1 L D5W
- c. Acetylcysteine 22.5 g in 1 L of D5W
- d. Acetylcysteine 24.75 g in 250 mL D5W; 8.25 g in 500 mL D5W; 16.5 g in 1 L D5W

56. A patient is receiving warfarin (using 2 mg tablets in compliance packaging) according to the following regimen:

Sunday (Su), Tuesday (Tu), Thursday (Th) and Friday (F) - 6 mg

Monday (M), Wednesday (W) and Saturday (Sa) - 2 mg

The patient's recent INR results have been consistently high and it is decided that the weekly dose should be reduced by 20%. Which of the following regimens would be most appropriate if the patient is to continue using 2 mg tablets in compliance packaging?

- a. Su, Tu, F - 5 mg; M, Th - 3 mg; W, Sa - 1 mg
- b. Su, M, Tu, W, Th, F - 4 mg; Sa - no warfarin
- c. 4 mg daily
- d. 3.5 mg daily

57. JK is a 68 year old female with type 2 diabetes. Her current medications include:

Perindopril 4 mg po daily

Rosuvastatin 20 mg po at bedtime

Metformin 1000 mg po bid

Sitagliptin 100 mg po daily

Risedronate 35 mg po once weekly on Wednesdays

Vitamin D 1000 units po daily

The pharmacist notices that JK is non-adherent with her medications, as she requests refills at inappropriate frequencies. JK explains that she sometimes forgets to take her medications since there are so many and she doesn't feel any difference from missing some of them. She often babysits her young grandchildren. The pharmacist offers to prepare JK's medications in compliance packaging. What is the most valid reason for offering this service to JK? Compliance packaging:

- a. is warranted due to JK's advanced age.
- b. will ensure that JK is adherent to her medications.
- c. is warranted due to JK's possible cognitive impairment.
- d. will ensure that JK's grandchildren cannot access her medications.

COMPETENCY 4: Practice Setting

58. MT, a registered pharmacy technician, has worked in a community pharmacy for five years. He is well-trained and welcomes new learning opportunities. His manager now wants to assign a new project related to the preparation of sterile products in the pharmacy. Which of the following steps should be taken first with the technician?

- a. Explore educational opportunities to prepare the technician for the project
- b. Provide an overview of the project goals and the intended role of the technician
- c. Discuss suggested strategies to effectively accomplish the project
- d. Negotiate a timeframe for the completion of the project

59. Which of the following criteria should be considered when reviewing a medication for addition to the hospital formulary?

- a. The amount of samples provided to hospital physicians
- b. Research funds donated to the hospital by the pharmaceutical company
- c. National adverse drug reaction reports
- d. Willingness of the pharmaceutical company to sponsor educational events

60. In deciding what medications are appropriate for its formulary, the hospital must consider a drug's efficacy, safety, associated workload, and acquisition cost. Several new intravenous antifungal agents (drug A, drug B, and drug C), all with equal efficacy and safety to drug D, have recently become available. Currently the hospital stocks drug D, which has been available for several years. Data for the medications is as follows:

| Drug Cost/day | Dosing Frequency | Treatment Duration (days) |
|----------------------|-------------------------|----------------------------------|
| A \$2.25 | once daily | 14 |
| B \$5.00 | bid | 7 |
| C \$2.25 | bid | 7 |
| D \$2.25 | qid | 7 |

The most appropriate choice for the hospital is:

- a. Drug A.
- b. Drug B.
- c. Drug C.
- d. Drug D.

61. A pharmacy manager is conducting yearly performance reviews for her pharmacy assistants. Which of the following statements is correct regarding this process?

- a. A group review is an effective means to motivate underperforming staff.
- b. Only performance issues of which the employee has been made aware should be included in the review.
- c. Staff who work in the same role should be ranked in comparison to one another.
- d. The results of the performance review should not be considered for employee wage increases.

62. A discrepancy in the pharmacy's inventory of hydromorphone 2 mg IR tablets is discovered during a routine narcotic reconciliation. The expected inventory amount is determined to be 612 tablets; however, a physical count of the actual inventory results in 554 tablets on-hand. Which of the following is the most appropriate next step for the pharmacist to take to complete the narcotic reconciliation process?

- a. Adjust the actual inventory to match the expected inventory total
- b. Check for any outstanding balance owings not yet dispensed
- c. Return any prescriptions not yet picked up back to inventory
- d. No action, as the discrepancy is less than 10% of expected inventory

63. Which of the following activities is a pharmacy assistant permitted to perform?

- a. Enter a new prescription into the pharmacy computer system
- b. Review a prescription for compliance with federal and provincial regulations
- c. Instruct a patient how to use an AeroChamber®
- d. Accept an authorization for a prescription refill from a prescriber over the telephone

COMPETENCY 5: Health Promotion

64. Which of the following is an appropriate recommendation for a pharmacist to provide to a patient regarding chronic allergic rhinitis from multiple environmental triggers?

- a. Use oxymetazoline 2 sprays in each nostril bid
- b. Use zippered, allergen-proof casings for mattresses and pillows
- c. Open windows to get fresh air into the home
- d. Take ibuprofen 200 mg/pseudoephedrine 30 mg po q8h

65. DS wishes to protect her children from West Nile infection and requests information from the pharmacist regarding insect repellents. Which of the following is correct information from the pharmacist?

- a. DEET should be applied to the skin before sunscreen.
- b. DEET is an effective repellent against mosquitoes, ticks, and stinging insects.
- c. Products containing oil of citronella are not recommended for children under 6 years of age.
- d. Products containing oil of citronella have a very short duration of effect.

66. A pharmacist is planning a public information session regarding the prevention and management of osteoporosis. Which of the following is an appropriate lifestyle recommendation to include?

- a. Drink one to two glasses of red wine with dinner
- b. Increase weight-bearing exercise such as walking
- c. Meet daily calcium needs through supplements rather than diet
- d. Rely on assistive devices such as canes or walkers to reduce the risk of falls

67. Which of the following scenarios best describes an effective strategy for a pharmacist to use to assist a patient who is a smoker in the preparation stage of change?

- a. Providing factual information about the consequences of smoking to raise the patient's awareness
- b. Identifying barriers and temptations associated with smoking cessation
- c. Helping the patient to set a quit date and announce the decision to family and friends
- d. Supporting and problem solving to address short-term, unanticipated issues

68. According to Canadian guidelines, which of the following patients should be offered the 13-valent pneumococcal vaccine, in addition to the 23-valent vaccine?

- a. 51 year old patient with type 2 diabetes mellitus
- b. 33 year old patient who is HIV-positive
- c. 49 year old patient with chronic kidney disease
- d. 45 year old patient with cirrhosis due to hepatitis C

69. In jurisdictions that do not require used fentanyl patches to be returned to pharmacies, which of the following is appropriate advice to provide to a patient regarding disposal of a fentanyl patch?

- a. Affix the used patch to a piece of paper and place in the household garbage
- b. Affix the used patch to a piece of paper and place in a secured garbage container, out of reach of children and pets
- c. Fold the adhesive sides of the used patch against themselves and place it in the household garbage
- d. Fold the adhesive sides of the used patch against themselves and flush it down the toilet

COMPETENCY 6: Knowledge and Research Application

70. Which of the following would be the most useful reference to learn what combination of antiretroviral agents is currently recommended as a first-line therapy to treat HIV infection?

- a. Meta-analyses
- b. A randomized, controlled trial
- c. Clinical practice guidelines
- d. Compendium of Pharmaceuticals and Specialties (CPS Drug Information)

71. Type II statistical error in a study comparing two drug treatment regimens occurs when:

- a. the control drug is not a "gold standard" treatment.
- b. a statistically significant difference exists but the difference is not clinically important.
- c. the population under investigation does not represent the population with the disease.
- d. the data shows no difference between two treatment regimens and a difference actually does exist.

72. An adequately powered, randomized controlled trial conducted over two years demonstrated that the primary outcome (a serious cardiovascular event) occurred in 15% of the patients who received the new drug, whereas the primary outcome occurred in 25% of the patients who received a placebo. The relative risk reduction achieved with the new drug is:

- a. 10%.
- b. 15%.
- c. 25%.
- d. 40%.

73. In an adequately powered, randomized controlled trial conducted over three years, a specific serious side effect (i.e., reduction in leukocytes) with conventional therapy is seen in 0.5% of the study sample. In patients who receive a newly discovered drug, only 0.45% experience the same side effect. Based on these results, the minimum number of patients that would need to receive the new drug for three years to statistically demonstrate the prevention of one episode of this side effect in at least one patient (i.e., NNT) is:

- a. 20.
- b. 150.
- c. 200.
- d. 2000.

74. A pharmacist has received information regarding a new drug to treat hypertension. The information is based on a two-month, placebo controlled, randomized study of 1000 adults that showed a significant average decrease in systolic pressure from 160 mm Hg to 141 mm Hg and diastolic pressure from 98 mm Hg to 86 mm Hg. The most common adverse reactions were stomach upset and dizziness. Which of the following is the most significant limitation of this study?

- a. The study size was too small to assess benefits adequately.
- b. The patients did not achieve guideline targets for hypertension.
- c. Lowered blood pressure is a surrogate outcome.
- d. Long-term safety and efficacy were not assessed.

75. A drug is being evaluated for the risk of hyperkalemia. A large retrospective, case control study has provided the following information:

| | Cases (n= 5250) | Controls (n=5000) |
|--------------------------|----------------------------|------------------------------|
| Number with hyperkalemia | 22 | 7 |

What is the odds ratio for hyperkalemia with this drug?

- a. 1
- b. 2
- c. 3
- d. 4

76. A physician from the Emergency Department contacts the hospital pharmacist about a patient visiting from the United States who has taken an apparent overdose of an unidentified tablet. The physician has one of the tablets and is able to provide a description, as well as information about the markings on the tablet. The most appropriate reference for the pharmacist to consult in order to identify the tablet is:

- a. Medline.
- b. RxFiles.
- c. Micromedex.
- d. Drug Product Database.

77. A non-inferiority trial is designed to test whether Drug X is non-inferior to Drug Y for clinical cure of infection. The non-inferiority margin for the odds ratio is set to 10% with a one-sided alpha level of 0.025. Therefore, the null hypothesis is that the cure rate for Drug X is inferior to Drug Y by more than 10%. Which of the following statements is correct?

- a. If the upper bound of the 95% confidence interval is greater than 0, then Drug X is non-inferior to Drug Y.
- b. If the lower bound of the 95% confidence interval is less than -10%, then Drug X is non-inferior to Drug Y.
- c. If the lower bound of the 95% confidence interval is greater than 1, then Drug X is superior to Drug Y.
- d. If the upper bound of the 95% confidence interval is greater than -10%, then Drug X is superior to Drug Y.

78. Which of the following correctly ranks the hierarchy of strength of evidence for treatment decisions in an individual patient from lowest to highest?

- a. Single observational study, single randomized trial, N-of-1 randomized trial, physiologic studies
- b. Single randomized trial, N-of-1 randomized trial, physiologic studies, single observational study
- c. N-of-1 randomized trial, physiologic studies, single observational study, single randomized trial
- d. Physiologic studies, single observational study, single randomized trial, N-of-1 randomized trial

COMPETENCY 7: Communication and Education

79. When counselling a patient who is upset about a new diagnosis and need for medications, which of the following strategies is **NOT** appropriate for the pharmacist to use?

- a. Providing a private environment for the interaction
- b. Advising the patient that things will be okay
- c. Probing to clarify the patient's concerns
- d. Letting the patient vent his/her feelings

80. In a hospital pharmacy, which of the following is the most effective strategy to enhance safety and minimize the incidence of interpretation errors associated with verbal medication orders?

- a. Use of bar code technology on medication orders
- b. Use of TALLman lettering on medication orders
- c. Use of automated dispensing technology
- d. Requirement for a read-back to the prescriber of all verbal orders

81. EF is a 54 year old male biochemistry professor with opioid misuse syndrome. EF's physician wants to start Suboxone® (buprenorphine/naloxone) to help manage his condition. EF is familiar with naloxone but asks the pharmacist how buprenorphine works. The pharmacist should respond that buprenorphine is a:

- a. partial agonist at the kappa-opioid receptor and weak antagonist at the mu-opioid receptor.
- b. partial agonist at the mu-opioid receptor and weak antagonist at the kappa-opioid receptor.
- c. strong agonist at the kappa-opioid receptor and weak antagonist at the mu-opioid receptor.
- d. strong agonist at the mu-opioid receptor and weak antagonist at the kappa-opioid receptor.

COMPETENCY 8: Intra and Inter-Professional Collaboration

82. A 27 year old male presents to a community pharmacy for the first time and tells the pharmacist that he experienced an allergy to a penicillin product as a child. His symptoms included hives, wheezing and facial swelling, which resulted in hospitalized care. Which of the following is the most important reason for a community pharmacist to document this type of information in the patient's medication profile record?

- a. To provide drug allergy information to the patient's insurance provider
- b. To encourage the patient to fill future prescriptions at this pharmacy
- c. To enhance continuity of patient care regardless of the prescriber
- d. To provide a record of cognitive services for insurance reimbursement

83. YZ is a patient who presents to the pharmacy for a refill of atenolol 50 mg tablets. The profile shows one refill remaining. A 90-day supply of 90 tablets was dispensed and billed to his insurance plan 60 days ago. YZ tells the pharmacist that he is currently taking atenolol 50 mg twice daily, as directed by his physician. Checking the original prescription determines that YZ was prescribed atenolol 50 mg daily. What is the most appropriate initial pharmacist response?

- a. Fill the prescription early and charge YZ the full amount
- b. Contact YZ's prescriber to request authorization for an early refill
- c. Contact YZ's prescriber to clarify the dose and the early refill
- d. Offer to advance YZ with a supply of tablets and bill his insurance in 30 days

84. A community pharmacist decides to collaborate with the local health department to offer expanded services for geriatric patients. Which of the following is the most appropriate first step to take?

- a. Hire an additional registered pharmacy technician to assist with the increased workload
- b. Arrange for a meeting with the local public health nurses
- c. Seek financial sponsorship from pharmaceutical manufacturers
- d. Gather information about geriatric issues in the community

85. RL is a 53 year old female with type 2 diabetes mellitus who is managed with oral metformin. Her current A1C is 8.0%. RL does take her metformin regularly but admits that she seldom cooks and only has time after work to pick up convenience foods or take-out meals. Which of the following health care professionals is the most appropriate to address RL's needs?

- a. Pharmacist
- b. Dietitian
- c. Family physician
- d. Nurse practitioner

COMPETENCY 9: Quality and Safety

86. Which of the following is the most appropriate quality assurance measure to assess the competency of a staff pharmacist?

- a. Rapid turnaround time on dispensing of medications
- b. Documented "catches" of near miss medication errors
- c. No patient complaints received by the pharmacy manager
- d. Number of continuing education sessions attended

87. Which of the following is **NOT** a benefit of performing medication reconciliation activities in a hospital setting?

- a. Reduction of medication errors
- b. Reduction of inventory pilferage
- c. Reduction of preventable adverse effects
- d. Assessment of patient adherence to therapy

88. An attending physician used the computerized practitioner order entry (CPOE) system in the hospital to order a single bolus infusion of 1 L Ringer's lactate solution to be administered over one hour to a patient. The evening pharmacist validated the electronic order without a stop date, and the nurse verified the pharmacist's entry. The medication administration record displayed an ongoing order of 1 L Ringer's lactate to be given every hour, which the nurses administered. The patient received an excess 9 L of Ringer's lactate in error. The unit pharmacist detected the error in the morning and notified the physician. The patient had pleural effusions requiring transfer to the ICU. The pharmacist submits an incident report in the hospital's confidential internal safety incident reporting system. Whose identity is the most appropriate to be documented in this report?

- a. The attending physician
- b. The pharmacist who validated the order
- c. The nurse who verified the order
- d. The nurses who administered the Ringer's lactate

89. A hospital's cardiac arrest committee decided to add epinephrine (for anaphylaxis) to all cardiac arrest carts. The epinephrine to be used for anaphylaxis (given either subcutaneously or intramuscularly) was labelled and stored outside of, but adjacent to, the cardiac arrest drug tray. This was done to avoid any confusion with the epinephrine to be used for cardiac arrest (given intravenously), stored within the drug tray.

After this change occurred, a patient, AH, developed hypotension after receiving a radiocontrast agent for a CT scan. AH required intubation, which was done with difficulty due to tongue swelling. It took the cardiac arrest team over one hour to stabilize and transfer her to the ICU. When AH was transferred to ICU, she was found to be profoundly hypotensive. AH's family requested a safety review of this incident. Which of the following is the most likely reason to explain AH's condition? The cardiac arrest team:

- a. lacked awareness that epinephrine for anaphylaxis was stored outside of the drug tray.
- b. could only find the intravenous epinephrine, which cannot be used for anaphylaxis.
- c. administered epinephrine intravenously, which is ineffective for the management of anaphylaxis.
- d. did not recognize the signs and symptoms of anaphylaxis in AH.

The next section includes EXAMPLES OF THE CASE SCENARIO FORMAT, in which there are two or more questions in sequence, which are related to the patient information provided in the (bolded) stem information shown at the top of the case.

QUESTIONS 90 TO 92 INCLUSIVE REFER TO THE FOLLOWING:

PB is a 70 year old female who is on the final day of a 10-day course of cotrimoxazole (sulfamethoxazole/trimethoprim) DS, i po bid for mild pyelonephritis. PB's medical conditions include hypertension and osteoarthritis, for which she takes enalapril 5 mg po bid and acetaminophen 650 mg po qid. PB has been feeling unwell for the past two days, complaining of abdominal pain, diarrhea, and muscle weakness. She presents to the emergency department, where it is discovered that her serum potassium level is 5.9 mmol/L (normal: 3.5-5.0 mmol/L) and her estimated creatinine clearance is 70 mL/min.

90. What drug therapy problem is PB currently experiencing?

- a. Her dosage of cotrimoxazole is too low.
- b. Her dosage of cotrimoxazole is too high.
- c. She is experiencing a drug interaction between enalapril and cotrimoxazole.
- d. She is experiencing a drug interaction between acetaminophen and cotrimoxazole.

91. PB's hyperkalemia puts her at risk for developing which of the following?

- a. Arrhythmias
- b. Renal failure
- c. Rhabdomyolysis
- d. Metabolic alkalosis

92. One month later, PB returns to her family physician with symptoms of another urinary tract infection (UTI). When hospitalized last month, her urinalysis showed resolution of the original UTI. This is now PB's third UTI in the past six months. She is still taking enalapril and acetaminophen as before, and she has no known allergies. After resolution of the current infection, which of the following is the most appropriate regimen for UTI prophylaxis for PB?

- a. Cotrimoxazole
- b. Trimethoprim
- c. Nitrofurantoin
- d. Prophylaxis is not indicated for PB.

QUESTIONS 93 TO 95 INCLUSIVE REFER TO THE FOLLOWING:

PQ is a 75 year old patient who has just been diagnosed with hypothyroidism. Her past medical history is significant for heart failure, type 2 diabetes mellitus, anemia, and chronic stable angina, all of which are well-controlled. Her medications include:

**Carvedilol 6.25 mg po bid
Ferrous fumarate 300 mg po daily
Vitamin D 1000 units po daily
Glyburide 2.5 mg po bid
Enalapril 10 mg po bid
Furosemide 40 mg po daily
Nitroglycerin sublingual spray prn**

93. PQ should be started on a low dose of levothyroxine because of her:

- a. age.
- b. gender.
- c. diabetes.
- d. metoprolol use.

94. Appropriate counselling and follow up for PQ with initiation of levothyroxine includes all of the following, **EXCEPT**:

- a. separate the levothyroxine dose from ferrous fumarate by several hours.
- b. take levothyroxine on a full stomach for greater absorption.
- c. physician follow up is needed in six to eight weeks to have her thyroid function tests repeated.
- d. closer monitoring of her angina should be done during dosage titration of levothyroxine.

95. Which of the following parameters is the most appropriate for PQ's self-evaluation of the effectiveness of levothyroxine therapy?

- a. Increased energy
- b. Weight loss
- c. Improved vision
- d. Less frequent angina

QUESTIONS 96 TO 98 INCLUSIVE REFER TO THE FOLLOWING:

A family health team is reviewing recent guidelines for dyslipidemia and cardiovascular risks. Physician colleagues ask the pharmacist for information on the recommendations for monitoring patients in various categories.

96. The current recommendation for performing a baseline plasma lipid profile in men is to screen all males over the age of:

- a. 35 years.
- b. 40 years.
- c. 50 years.
- d. 55 years.

97. Lipid profile screening is important in all patients who have a history of:

- a. COPD.
- b. GERD.
- c. diabetes.
- d. liver disease.

98. Which of the following is the primary assessment tool recommended to quantify a patient's 10-year risk for total cardiovascular disease?

- a. Framingham risk score
- b. SCORE risk estimator
- c. TIMI risk score
- d. CHADS₂ score

QUESTIONS 99 and 100 REFER TO THE FOLLOWING:

HM is a regular client at the pharmacy. He has been taking quetiapine 300 mg po bid for eight months to help control his schizophrenia symptoms but he has recently noticed that some of his symptoms have been worsening. Prior to starting quetiapine, HM took risperidone therapy for two years. HM is a regular smoker and smokes between 10 to 20 cigarettes per day. HM tells the pharmacist that now his psychiatrist would like to change his regimen to clozapine.

99. In assessing the possible change to clozapine for HM, which of the following statements is the most appropriate for the pharmacist to consider?

- a. This change is appropriate, as clozapine may help patients who fail on other antipsychotics.
- b. This change is not appropriate, as clozapine will likely produce the same effect as quetiapine.
- c. This change is not appropriate, as the cost of monitoring and risk of adverse effects with clozapine is too high.
- d. This change is not appropriate, because the preferred recommendation is to add clozapine to the current quetiapine.

100. HM is concerned about the possible adverse effects from clozapine. When discussing monitoring with HM, which of the following statements is the most appropriate to include?

- a. Dry eyes and dry mouth occur frequently and may be managed with nonprescription supplements.
- b. Problems affecting the blood do occur rarely and regular blood lab work is required.
- c. Cigarette smoking may increase the likelihood of experiencing side effects from clozapine.
- d. Parkinsonian and other movement disorders may occur even with low doses of clozapine.

QUESTIONS 101 TO 103 INCLUSIVE REFER TO THE FOLLOWING:

WW is a 55 year old, obese male (BMI 35) with newly diagnosed type 2 diabetes. His most recent fasting blood glucose is 9.6 mmol/L and A1C is 8%. He also suffers from hypertension and osteoarthritis in his knees. His current medications are: ramipril 20 mg po daily and acetaminophen 500 mg po qid.

101. Which of the following agents is the most appropriate choice for WW at this time?

- a. Gliclazide
- b. Sitagliptin
- c. Canagliflozin
- d. Metformin

102. If the anti-hyperglycemic agent chosen for WW is having its intended benefit, the most appropriate therapeutic outcome would be:

- a. achieving target A1C at three months.
- b. fasting blood glucose < 6.1 mmol/L within two weeks.
- c. decreased BMI within three months.
- d. no episodes of hyperglycemia.

103. After starting on the anti-hyperglycemic agent, WW would like advice regarding self-monitoring of his blood glucose. Which of the following statements is most appropriate for WW?

- a. Blood glucose should be tested upon waking and before each meal.
- b. Self-monitoring of blood glucose is not warranted at this time.
- c. WW should avoid testing at alternate sites (e.g., forearm) since accuracy is reduced in obese patients.
- d. Self-monitoring will help WW to adjust the dosing of oral therapy in relation to meal size.

QUESTIONS 104 TO 105 INCLUSIVE REFER TO THE FOLLOWING:

TK is a 63 year old male with chronic kidney disease (Cr Cl = 29 mL/min/1.73 m²) and gout. He experienced his last gout attack about two months ago. Today his toe is extremely painful, hot, red and swollen. At a walk-in clinic, he receives a prescription for naproxen 500 mg po bid for five days. TK's other current medication is pravastatin 20 mg po at bedtime.

104. What drug therapy problem should the pharmacist identify for TK?

- a. Naproxen is inferior to indomethacin for the treatment of acute gout.
- b. The duration of naproxen treatment is too short.
- c. Naproxen should be avoided in patients taking pravastatin.
- d. Naproxen should be avoided in patients with renal dysfunction.

105. Following successful resolution of the acute episode, TK's physician decides that he should initiate allopurinol. TK should be advised to:

- a. limit fluid intake.
- b. take medication on an empty stomach.
- c. use precautions to avoid photosensitivity.
- d. report any skin rash or itching to the physician.

QUESTIONS 106 TO 108 INCLUSIVE REFER TO THE FOLLOWING:

TK is a 54 year old male who is a new patient at the pharmacy. He presents today with a new prescription for 20 diazepam 10 mg, i po qid and taper as directed over five to seven days. In discussion with the pharmacist, TK admits that he has abused alcohol for the last three years, but that he stopped drinking yesterday when he went to an alcohol treatment centre. He discloses that he has not been looking after himself or eating well in recent months. His current symptoms include agitation, insomnia, and tremulousness. His medical history is otherwise insignificant.

106. Which of the following drug therapy problems is the most important current issue for the pharmacist to identify for TK?

- a. TK is receiving too high a dose of diazepam.
- b. Diazepam is not indicated for TK.
- c. TK requires treatment with thiamine.
- d. TK is not currently experiencing any drug therapy problems.

107. During the consultation, TK notices that his neighbour's daughter, Cheryl, is employed as a front-shop cashier in the pharmacy. He feels uncomfortable about providing further information about his medical condition. What is the most appropriate initial action to be taken by the pharmacist?

- a. Advise TK that disclosure of information is necessary to address his medical needs
- b. Suggest that TK can go to another pharmacy if he wishes to avoid this concern
- c. Offer a private counselling area and advise TK that no information will be disclosed to Cheryl
- d. Advise TK that alcohol abuse is a medical problem and he should not feel uncomfortable about it

108. Later that same day, TK returns to the pharmacy with his vial of diazepam. He tells the pharmacist that he did not receive the labelled quantity of the medication. The pharmacist determines that a counting error did occur. What is the best way for the pharmacist to prevent this type of error in the pharmacy in the future?

- a. Require that all narcotics and benzodiazepine prescriptions be counted only by pharmacist staff
- b. Obtain signatures from patients picking up orders to confirm receipt of the correct labelled quantity
- c. Double count all narcotics and benzodiazepines and document on the prescription hardcopy
- d. Use an electronic pill counter to ensure accurate prescription quantities for these medications

QUESTIONS 109 TO 111 INCLUSIVE REFER TO THE FOLLOWING:

AE is a 54 year old female with obesity (BMI 42) and osteoporosis, who takes the following medications:

- Alendronate/vitamin D (Fosavance®)**
- Metformin extended-release (Glumetza®)**
- Gliclazide modified-release (Diamicron MR®)**
- Calcium citrate**
- Ranitidine**

AE is scheduled to undergo bariatric surgery that will result in a bypass of the duodenum, proximal jejunum, and all of her stomach except for the cardia. Her surgeon has asked AE to discuss any necessary modifications to her medication regimen with her pharmacist.

109. Which of the following physiologic factors would be expected to increase following AE's gastric bypass surgery?

- a. Gastric pH
- b. Surface area of the gastric mucosa
- c. Gastric emptying time
- d. Enterohepatic recirculation

110. Which of the following online resources is the most useful for determining appropriate postsurgical modifications to AE's medication regimen?

- a. RxFiles
- b. CredibleMeds
- c. PubMed
- d. CPS Drug Information

111. Which of the following alternatives is the most appropriate recommendation for the pharmacist to suggest for switching AE's osteoporosis therapy?

- a. Teriparatide
- b. Etidronate
- c. Denosumab
- d. Raloxifene

QUESTIONS 112 TO 113 INCLUSIVE REFER TO THE FOLLOWING:

TG, a 43 year old male, is admitted to the Emergency Department (ED) following a car accident. TG is diagnosed with an open femur fracture. In the trauma treatment area, the extensive leg wound requires thorough cleaning prior to fracture reduction. TG did not take any medications prior to the accident and is not known to have any medical conditions.

112. The ED physician asks the pharmacist what IV antibiotic prophylaxis should be given to TG for the open fracture. Which of the following would provide the most appropriate empiric antibiotic coverage for TG?

- a. Cefazolin + metronidazole
- b. Clindamycin + vancomycin
- c. Metronidazole + gentamicin
- d. Cefazolin + gentamicin

113. Following the fracture reduction surgery, TG is transferred from the ED to the orthopedics ward for monitoring before he can be discharged to a rehabilitation center. Which of the following therapies for deep vein thrombosis prophylaxis is the most appropriate while TG remains bedridden?

- a. Clopidogrel
- b. Enoxaparin
- c. Warfarin
- d. Rivaroxaban

QUESTIONS 114 TO 115 INCLUSIVE REFER TO THE FOLLOWING:

FN, an 83 year old female, has early onset Alzheimer disease, Parkinson disease, mild heart failure, and urinary incontinence. She often becomes agitated in the evening. Her current medications include the following:

Levodopa-carbidopa CR 200/50 mg po bid
Risperidone 0.25 mg po bid
Bumetanide 1 mg po daily
Donepezil 10 mg po daily
Ramipril 2.5 mg po qam
Calcium citrate 500 mg (elemental) po tid

114. Which of FN's medications is most likely contributing to her urinary incontinence?

- a. Levodopa-carbidopa
- b. Risperidone
- c. Bumetanide
- d. Ramipril

115. Which of FN's medications may worsen her Parkinson's diseases?

- a. Risperidone
- b. Donepezil
- c. Ramipril
- d. Calcium citrate

QUESTIONS 116 TO 117 INCLUSIVE REFER TO THE FOLLOWING:

Amoxicillin suspension is available in two strengths as shown below

Amoxicillin 125 mg/5 mL (100 mL bottle size) costs \$3.20

Amoxicillin 250 mg/5 mL (100 mL bottle size) costs \$5.40

Using the information provided above, the pharmacist is required to fill the following prescription:

Amoxicillin 187.5 mg po tid x 10 days

116. Which of the following provides the most cost-effective dosing regimen, rounding to full bottles?

- a. Two bottles of amoxicillin 125 mg/5 mL
- b. Three bottles of amoxicillin 125 mg/5 mL
- c. One bottle of amoxicillin 250 mg/5 mL
- d. Two bottles of amoxicillin 250 mg/5 mL

117. Which of the following provides the smallest, correct volume of amoxicillin suspension needed for each dose of this prescription?

- a. 3.75 mL of amoxicillin 125 mg/5 mL
- b. 7.5 mL of amoxicillin 125 mg/5 mL
- c. 3.75 mL of amoxicillin 250 mg/5 mL
- d. 7.5 mL of amoxicillin 250 mg/5 mL

QUESTIONS 118 TO 120 INCLUSIVE REFER TO THE FOLLOWING:

EP is a 68 year old female with hypertension, type 2 diabetes, and a seizure disorder. EP has no known medication allergies or intolerances. Her current medications are:

- Perindopril 4 mg po daily**
- Rosuvastatin 10 mg po at bedtime**
- Metformin 500 mg po bid**
- Linagliptin 5 mg po daily**
- Phenytoin 250 mg po at bedtime**

For the past three days, EP has experienced fever, dysuria, increased urinary frequency, and urgency. She consulted her family physician who diagnosed a lower urinary tract infection. Urinary culture and sensitivity results are pending. The family physician prescribes the following empiric treatment:

Sulfamethoxazole/trimethoprim DS (800/160 mg) - 1 tab po bid for 7 days

118. Which of the following organisms is most likely to be the cause of EP's urinary tract infection?

- a. Group A streptococcus
- b. Coagulase-positive staphylococcus
- c. *Serratia marcescens*
- d. *Escherichia coli*

119. What drug therapy problem should the pharmacist identify for EP?

- a. The length of treatment with sulfamethoxazole/trimethoprim should only be three days for EP.
- b. Sulfamethoxazole/trimethoprim interacts with phenytoin and should be changed to another antibiotic.
- c. Sulfamethoxazole/trimethoprim should be replaced with ciprofloxacin, as ciprofloxacin is the first-line option for empiric treatment.
- d. Antibiotic treatment should be started after the urinary culture and sensitivity report is obtained.

120. During the same appointment, EP's family physician orders a repeat phenytoin level. The following results are obtained:

Total phenytoin level = 38 $\mu\text{mol/L}$

Albumin = 30 g/L

The physician contacts the pharmacist to obtain a recommendation for adjusting the dose of phenytoin based on the following formula:

$$\text{Corrected phenytoin level} = \frac{\text{Total phenytoin level}}{0.2 \times \text{albumin (g/dL)} + 0.1}$$

Which of the following is the most appropriate recommendation for the pharmacist to provide to EP's physician?

- a. Increase the dose of phenytoin to 300 mg po at bedtime and repeat the phenytoin level in one week
- b. Decrease the dose of phenytoin to 200 mg po at bedtime and repeat the phenytoin level in one week
- c. Increase the dose of phenytoin to 350 mg po at bedtime and repeat the phenytoin level in one week
- d. Maintain the current dose of phenytoin and repeat the phenytoin level in three months

QUESTIONS 121 TO 123 INCLUSIVE REFER TO THE FOLLOWING:

DK is a 50 year old female who asks the pharmacist about using bismuth subsalicylate for indigestion. She has a stressful job and reports that she had a peptic ulcer which resolved approximately one year ago. She is training to run a 10 km race in two months. On training days (three to four days per week) she takes ibuprofen 200 mg po tid for shin pain. Her father died from a heart attack at the age of 60 years, so DK takes EC-ASA 81 mg po daily. Her other medications include:

Atorvastatin 10 mg po daily

Ferrous fumarate 300 mg po daily

Calcium carbonate (Tums[®]) 1000 mg po daily

Vitamin D 1000 units po daily

DK is a non-smoker and drinks two cups of coffee per day and has two alcoholic beverages daily with dinner.

121. The pharmacist should be concerned about DK's risk for NSAID-associated toxicity/adverse effects due to her:

- a. lifestyle.
- b. age.
- c. medical history.
- d. family history.

122. Which of the following is most appropriate advice for the pharmacist to provide to DK for managing her current GI upset?

- a. Eliminate coffee and alcohol from her diet
- b. Discontinue the use of EC-ASA
- c. Use bismuth subsalicylate 524 mg po qid for 14 days
- d. Use omeprazole 20 mg po daily when taking ibuprofen

123. Three weeks later the pharmacist follows up with DK. DK states that she is still having occasional indigestion, especially after eating out. DK also states that she has switched from using ibuprofen to naproxen 220 mg po tid, since she continues to have shin pain after her daily runs. Her race is happening in four weeks. What is reasonable advice for the pharmacist to give to DK?

- a. Advise DK to discontinue naproxen and start acetaminophen 1 g po tid
- b. Refer DK to a physiotherapist for assessment
- c. Advise DK to elevate her legs after each run and apply heat to her shins
- d. Offer to sell DK graduated compression stockings to wear while running

Answers to Part I (MCQ) Sample Questions

| | | | | |
|---------|---------|---------|----------|----------|
| 1. (a) | 26. (a) | 51. (d) | 76. (c) | 101. (d) |
| 2. (d) | 27. (b) | 52. (d) | 77. (c) | 102. (a) |
| 3. (c) | 28. (d) | 53. (d) | 78. (d) | 103. (b) |
| 4. (a) | 29. (c) | 54. (b) | 79. (b) | 104. (d) |
| 5. (d) | 30. (c) | 55. (b) | 80. (d) | 105. (d) |
| 6. (d) | 31. (d) | 56. (b) | 81. (b) | 106. (c) |
| 7. (c) | 32. (d) | 57. (c) | 82. (c) | 107. (c) |
| 8. (d) | 33. (b) | 58. (b) | 83. (c) | 108. (c) |
| 9. (d) | 34. (a) | 59. (c) | 84. (d) | 109. (a) |
| 10. (a) | 35. (a) | 60. (c) | 85. (b) | 110. (d) |
| 11. (c) | 36. (d) | 61. (b) | 86. (b) | 111. (c) |
| 12. (b) | 37. (c) | 62. (b) | 87. (b) | 112. (d) |
| 13. (c) | 38. (a) | 63. (a) | 88. (a) | 113. (b) |
| 14. (c) | 39. (d) | 64. (b) | 89. (d) | 114. (c) |
| 15. (a) | 40. (a) | 65. (d) | 90. (c) | 115. (a) |
| 16. (c) | 41. (b) | 66. (b) | 91. (a) | 116. (b) |
| 17. (c) | 42. (d) | 67. (c) | 92. (c) | 117. (c) |
| 18. (c) | 43. (d) | 68. (b) | 93. (a) | 118. (d) |
| 19. (c) | 44. (d) | 69. (d) | 94. (b) | 119. (b) |
| 20. (d) | 45. (c) | 70. (c) | 95. (a) | 120. (d) |
| 21. (d) | 46. (b) | 71. (d) | 96. (b) | 121. (c) |
| 22. (c) | 47. (b) | 72. (d) | 97. (c) | 122. (d) |
| 23. (c) | 48. (d) | 73. (d) | 98. (a) | 123. (b) |
| 24. (d) | 49. (a) | 74. (d) | 99. (a) | |
| 25. (a) | 50. (a) | 75. (c) | 100. (b) | |