



# The Pharmacy Examining Board of Canada

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## 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. SH is a 57 year old female who is a regular customer at the pharmacy and has the following medication profile:

<u>Drug</u>	<u>Dosage</u>	<u>Date first filled</u>	<u>Date last filled</u>	<u>Repeats left</u>
90 Amlodipine	10 mg daily	2 years ago	3 months ago	none
90 Indapamide	1.25 mg daily	2 years ago	3 months ago	none
30 Zopiclone	7.5 mg hs prn	1 year ago	2 weeks ago	none
90 Paroxetine	20 mg daily	1 year ago	3 months ago	none
30 Atorvastatin	10 mg daily	1 month ago	1 month ago	none

On a Saturday evening, SH phones the pharmacist and says that she has run out of all her medications and asks for a two-day advance supply until her scheduled physician appointment which is on Monday. Using appropriate professional and ethical/legal judgment, which of the following pharmacist responses is most appropriate?

- Provide a two-day supply of all five medications to SH
- Provide a two-day supply of all medications except zopiclone
- Provide a two-day supply of all medications except zopiclone and paroxetine
- Direct SH to visit a local walk-in clinic to get a new prescription authorization

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<sup>®</sup>). 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:

- refer the patient to a walk-in clinic for a medical assessment before providing the medication.
- put the needs of the patient first and provide the medication on a "once but not again" basis.
- put the needs of the patient first, provide the medication and suppress one's personal moral objections.
- 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.** A hospital pharmacy technician identifies a narcotic discrepancy on the record of an Automated Dispensing Cabinet on a patient care unit. The discrepancy occurred 20 days prior and the nursing staff member that created the discrepancy is no longer employed at the hospital. Which of the following is the most appropriate step? The pharmacy technician should request that:

- a. a nurse on the current shift corrects the discrepancy and reports it to the police.
- b. a nurse on the current shift corrects the discrepancy and reports it to Health Canada.
- c. a pharmacist on the current shift corrects the discrepancy and reports it to the police.
- d. a pharmacist on the current shift corrects the discrepancy and reports it to Health Canada.

**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.** According to federal legislation, which of the following requirements is correct for a prescription of pregabalin?

- a. Only written prescriptions are permitted.
- b. Transfers of refills are permitted.
- c. Refills are permitted, only within one year from the date of the original prescription.
- d. Sales reports are required.

**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.** RK presents to a community pharmacy with the following new prescription:

Bupropion (Wellbutrin®) 150 mg SR tablets

Sig: take as directed by physician

Mitte: 80 tablets, repeat x 1

RK informs the pharmacist that the bupropion is for smoking cessation, but his third-party insurance does not cover it for this indication. Therefore, the physician wrote the prescription for Wellbutrin® instead of Zyban® so that it would be covered. Which of the following actions taken by the pharmacist best demonstrates the ethical principle of veracity, while maintaining professional obligations?

- a. Inform RK's third party insurance plan that the prescription is for smoking cessation
- b. Fax RK's physician to inform him that the prescription cannot be filled
- c. Contact RK's physician to discuss smoking cessation alternatives that the third-party insurance plan may cover
- d. Process the prescription as written to ensure that RK receives therapy

**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. Which of the following vaccines is administered orally?

- a. Meningococcal conjugate
- b. Pneumococcal conjugate
- c. Hepatitis A
- d. Rotavirus

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 (*Clostridioides 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. GW, a 17 year old female was diagnosed several years ago with mild, intermittent asthma and has been using a salbutamol inhaler five times a week for shortness of breath. She does not want to use an inhaled corticosteroid for her asthma as her physician has prescribed. The physician calls the pharmacist for advice on an alternative. The most appropriate therapeutic alternative is:

- a. scheduled inhaled salbutamol.
- b. inhaled tiotropium.
- c. inhaled salmeterol.
- d. oral montelukast.

17. TL is a 62 year old female who has been hospitalized three times in the past 18 months for acute exacerbations of chronic obstructive pulmonary disease. TL uses ipratropium bromide and salbutamol inhalers chronically. She is visiting her family physician in November for a routine physical, and wonders about updating her immunization status. She received influenza and pneumococcal vaccines two years ago. Which of the following vaccination recommendations is the most appropriate for TL at this time?

- a. TL should receive an influenza vaccine this year.
- b. TL should receive a booster dose of pneumococcal vaccine this year.
- c. TL should receive an influenza vaccine and a pneumococcal vaccine yearly.
- d. TL should receive an influenza vaccine and a pneumococcal vaccine in three years' time.

**18.** A patient who has a diffusely reddened eye with some purulent discharge asks the pharmacist about self treatment with Polysporin<sup>®</sup> (polymyxin B/gramicidin) eye drops. Which of the following is appropriate advice for the pharmacist to provide?

- a. The affected eye should be covered with an occlusive patch.
- b. The eye drops should be instilled at least four times daily.
- c. Treatment should be continued for five days after symptoms resolve.
- d. If there is no improvement within 24 hours of starting treatment, a physician should be consulted.

**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<sup>®</sup> (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<sup>®</sup>. 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<sup>®</sup>.
- c. Plan B<sup>®</sup> 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<sup>®</sup>.

**21.** The pharmacist meets with FP, a 68 year old female with a history of metastatic breast cancer, TIAs, depression, anxiety, pain, and insomnia. FP has been referred for Palliative Care and she shares with the pharmacist that she is only interested in continuing medications to improve her quality of life. She is not interested in taking life-prolonging medications, given her prognosis. Based on her preferences, which of FP's medications should be discontinued?

- a. EC-ASA 81 mg po daily
- b. Gabapentin 300 mg po tid
- c. Duloxetine 60 mg po daily
- d. Lorazepam 1mg po qhs prn

**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.** In addition to washing items in contact with the head, which of the following nonpharmacological strategies should also be recommended for managing head lice?

- a. Carpets and rugs should be steam cleaned.
- b. Long hair should be cut short to prevent reinfestation with lice.
- c. Items that cannot be laundered should be sealed in a plastic bag for two weeks.
- d. Household items should be disinfected and all surfaces wiped down with bleach.

**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 subcutaneously 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.** NL is a 76 year old male with hypertension, heart failure with reduced ejection fraction, type 2 diabetes, and chronic kidney disease (CrCl = 40 mL/min). He takes the following medications:

- Perindopril 8 mg po daily
- Metoprolol 25 mg po bid
- Furosemide 40 mg po bid
- Atorvastatin 20 mg po at bedtime
- Metformin 500 mg po bid
- Sitagliptin 50 mg po daily
- Repaglinide 1 mg po tid

One week ago, NL was admitted to the hospital for a NSTEMI treated by percutaneous coronary intervention (PCI) and placement of a drug-eluting stent. After being discharged, he presents the following prescriptions to his community pharmacy:

- EC-ASA 80 mg po daily
- Clopidogrel 75 mg po daily
- Increase atorvastatin to 40 mg po at bedtime
- Increase metoprolol to 50 mg po bid
- Continue perindopril, furosemide, metformin, sitagliptin, and repaglinide as taken previously

What drug therapy problem should the pharmacist identify after reviewing NL's profile?

- a. Sitagliptin should be stopped as it is contraindicated in heart failure.
- b. The dose of atorvastatin should be kept at a moderate dose of 20 mg as NL is older than 75 years.
- c. Metformin should be stopped as it is contraindicated in chronic kidney disease.
- d. Repaglinide should be stopped and replaced by gliclazide, due to a potential interaction with clopidogrel.

**28.** FR is a 70 year old female 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.** Which of the following statements about atomoxetine for the treatment of attention deficit hyperactivity disorder is correct?

- a. It has an abuse potential that is similar to stimulant medications.
- b. It should not be used in children under the age of 12 years.
- c. It requires dose adjustment in patients with renal impairment.
- d. It is commonly associated with decreased appetite.

**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 H<sub>2</sub> 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.** Using the following formulation, what is the % (w/v) of zinc oxide in the finished lotion?

Resorcinol	2 g
Glycerin	
Zinc Oxide, aa	30 g
Witch Hazel	60 mL
Aq Dist, qs ad	180 mL

- a. 6.7%
- b. 8.3%
- c. 13.3%
- d. 16.7%

**41.** An auxiliary label stating "take on an empty stomach" should be placed on the prescription vial for which of the following oral medications?

- a. Ketorolac
- b. Lithium
- c. Cloxacillin
- d. Clindamycin

**42.** Which of the following medication orders should prompt the pharmacist's investigation, due to possible inappropriate prescribing quantity?

- a. 360 acetaminophen 500 mg, ii po tid
- b. 300 sustained release codeine 60 mg, i po bid
- c. 240 metoclopramide 10 mg, i po qid
- d. 6 acetaminophen 325 mg/oxycodone 5 mg, i po prn as directed

**43.** A regular patient at the pharmacy comes to the pharmacy to purchase a bottle of dimenhydrinate. The pharmacist is concerned about possible abuse since this is the third purchase in a month. In handling this situation, all of the following would be appropriate actions by the pharmacist, **EXCEPT** to:

- a. advise the patient to consult a gastroenterologist.
- b. review the patient's medication profile.
- c. ask the patient how many tablets he takes per day.
- d. discuss the abuse potential of dimenhydrinate.

**44.** A medication order for a patient weighing 176 lbs calls for 0.25 mg of amphotericin B per kg of body weight to be added to 500 mL of D5W solution. If the amphotericin B is to be obtained from a solution that contains 50 mg/20 mL, what volume of this solution should be added to the D5W solution?

- a. 0.8 mL
- b. 5 mL
- c. 8 mL
- d. 17.6 mL

**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.** A patient is taking 1,000 units of vitamin D po bid. If 40 units of vitamin D is equivalent to one microgram of ergocalciferol, how much ergocalciferol is this patient receiving daily?

- a. 25 mcg
- b. 50 mcg
- c. 80 mcg
- d. 100 mcg

**47.** Which of the following requires preparation in a laminar air flow hood?

- a. A minibag of cefuroxime 1 g in 50 mL of D5W, for immediate administration within one hour to a pediatric patient with pneumonia
- b. A dropper bottle of vancomycin 25 mg/mL eye drops prepared using vancomycin powder for injection, for use within the next 24 hours in a patient with keratitis
- c. A 3 L batch of methylcellulose 1% suspension, for future use in compounding pediatric oral suspensions
- d. A 30-day supply of progesterone 200 mg vaginal suppositories, for use in a pregnant patient to prevent pre-term birth

**48.** RF has cerebral palsy and lives in a long-term care facility. He is fed via PEG tube and has no IV access. The pharmacist providing service to the long-term care facility receives a prescription for RF for phenytoin 400 mg intramuscularly at bedtime. Laboratory results indicate that the corrected phenytoin level is 77  $\mu\text{mol/L}$ . On reviewing RF's profile, the pharmacist notes that this same prescription was filled by another pharmacist one week prior for a one-week supply. The most appropriate action for the pharmacist receiving this new prescription is to:

- a. prepare phenytoin 400 mg pre-filled syringes using sterile technique and dispense a one week supply.
- b. contact the prescriber and suggest changing the order to phenytoin suspension 500 mg via PEG at bedtime.
- c. dispense phenytoin vials with instructions for the nurse at the long-term care facility to draw up the appropriate volume for injection at the time of each dose.
- d. contact the prescriber and suggest changing the order to phenytoin suspension 300 mg via PEG at bedtime.

**49.** A patient weighing 172 lb requires treatment with IV amphotericin B for treatment of an aspergillus infection. The target cumulative dose of amphotericin B is 2.5 g, administered as a daily dose of 0.8 mg/kg/day. How many days of therapy with amphotericin B are required in order for this patient to receive the target dose?

- a. 18
- b. 40
- c. 55
- d. 69

**50.** HH is a 63 year old female who has been taking gabapentin 500 mg po tid for post-herpetic neuralgia. Her physician wishes to reduce her dose gradually to see if the medication is still needed. The reduction is scheduled for 500 mg po tid for two more days, then reduce the total daily dose by 100 mg every two days until a dose of 200 mg po tid is reached for seven days. HH will see the physician after her breakfast dose on day seven of taking 200 mg po tid. HH would like to take the fewest number of capsules possible each day, and would only like to purchase enough medication to last until her physician appointment. She has a sufficient supply of 300 mg capsules and 12 x 100 mg capsules at home. How many 100 mg capsules of gabapentin should be dispensed for HH?

- a. 53
- b. 80
- c. 84
- d. 96

51. A pharmacist receives a prescription for amoxicillin 500 mg po tid x 10 days for SC, a 12 year old patient. SC's mother asks if the prescription can be made more concentrated as SC is having a hard time swallowing. Amoxicillin is available in powder form which, when reconstituted with 101 mL of water, produces 150 mL of 250 mg/5 mL suspension. The pharmacist confirms stability and pours the powder from two bottles into a larger bottle for reconstitution. How much water should be added to the powder to prepare the prescription so that each dose for SC requires only 5 mL of suspension?

- a. 52 mL
- b. 101 mL
- c. 150 mL
- d. 202 mL

52. A patient asks the pharmacist about compliance packaging. His medications are as follows: rabeprazole 20 mg po daily; bisoprolol 5 mg po daily; ramipril 5 mg po daily; and zopiclone 7.5 mg po qhs prn. Which of his medications is **NOT** appropriate to include in the blister package?

- a. Bisoprolol
- b. Zopiclone
- c. Ramipril
- d. Rabeprazole

53. Which of the following medications requires an auxiliary label to avoid the consumption of grapefruit and grapefruit juice?

- a. Erythromycin
- b. Rosuvastatin
- c. Warfarin
- d. Finasteride

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

- a. Gravol<sup>®</sup> (dimenhydrinate)
- b. Enbrel<sup>®</sup> (etanercept)
- c. Imitrex<sup>®</sup> (sumatriptan succinate)
- d. EpiPen<sup>®</sup> (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.** AJ is the 37 year old grandson of one of the pharmacy's patients, KA. AJ presents to the pharmacy today with a bag full of KA's medications. He indicates that KA passed away last week and explains that he wants to ensure proper handling of her unused medications. The bag contains the following medications:

- Gefitinib 250 mg tablets - In original packaging, packaging is sealed, in date
- Salbutamol 100 mcg inhaler - In original packaging, packaging is sealed, expired
- Enoxaparin 100 mg pre-filled syringes - In original packaging, box and individual syringes are sealed, in date

What is the most appropriate way to handle these medications?

- a. Return gefitinib and enoxaparin to stock; dispose of the salbutamol in the pharmacy.
- b. Return gefitinib and enoxaparin to stock; return the salbutamol inhaler to the manufacturer for reimbursement.
- c. Return gefitinib to stock; return the salbutamol inhaler to the manufacturer for reimbursement; dispose of enoxaparin in the pharmacy since it cannot be restocked.
- d. Dispose of gefitinib, salbutamol, and enoxaparin since none of these medications can be restocked.

**59.** Which of the following tasks is within the scope of practice of a registered pharmacy technician in Canada?

- a. Gathering a best possible medication history
- b. Recommending a nonprescription product to a patient
- c. Signing for receipt of a drug order containing Schedule G drugs
- d. Modifying a prescription from an oral solid to a liquid formulation

**60.** A pharmacy manager has introduced product scanning technology to the dispensary. The Universal Product Code (UPC) of the prescription item is scanned at the point when the pharmacy technician prepares a prescription refill. In addition to an accurate visual DIN verification, the scanning process can help most to reduce which of the following system errors?

- a. Selecting a strength different from the prescription label
- b. Entering the wrong dosage form on the prescription label
- c. Selecting the wrong package size for the prescription
- d. Repeating an order entry mistake made on the original prescription

**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 owing 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.** 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



## COMPETENCY 6: Knowledge and Research Application

**67.** In evaluating a drug literature article, the pharmacist notes that the study protocol included two active study arms. One arm used a marketed drug that was considered the current standard of care for the disease state, while the other arm was an investigational drug being evaluated for the disease state. Each patient received either the standard drug or the investigational drug for a fixed period of time, then after a washout period where no drug was given, the patient received the other treatment. Which of the following terms best describes the methodology of this study?

- a. Randomized
- b. Double cohort
- c. Cross-over
- d. Open label

**68.** 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.

**69.** A physician asks the pharmacist if a new antihyperglycemic drug has received approval for sale in Canada yet. Which of the following is the most appropriate information source for the pharmacist to consult?

- a. CPS Full Access
- b. Health Canada's Drug Product Database
- c. Health Canada's MedEffect
- d. Micromedex

**70.** An analysis that requires all outcomes to be expressed in monetary units to compare the financial value to the financial cost of a treatment intervention is known as a:

- a. budget impact analysis.
- b. cost-benefit analysis.
- c. cost of illness study.
- d. cost-minimization analysis.

71. 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

### COMPETENCY 7: Communication and Education

72. Which of the following statements best describes the practice of shared decision-making? The health care provider shares information on treatment options with:

- a. the patient. The patient is then asked to make the treatment decision autonomously, based on personal preferences.
- b. the patient's primary care provider. The primary care provider then chooses the best therapy for the patient based on treatment guidelines.
- c. the patient's primary care provider. Together, these two health care providers make the treatment decision that they feel is best for the patient.
- d. the patient. The health care provider makes the treatment decision together with the patient, factoring in the patient's personal goals and preferences.

73. A hospital pharmacist receives an order for phenytoin 100 mg IV q8h for a patient admitted to the Coronary Care Unit (CCU) with a myocardial infarction and recent tonic-clonic seizure. The patient is receiving ticagrelor and the pharmacist identifies a drug-drug interaction between phenytoin and ticagrelor. What is the most effective initial communication method for management of this interaction?

- a. Page the physician covering the CCU to discuss the implications of the interaction before processing the phenytoin order.
- b. Phone the nursing unit and request that the patient's nurse hold the dose of ticagrelor until the issue can be discussed at rounds the next morning.
- c. Fax printed information with the details of the drug interaction to the nursing unit, requesting physician review.
- d. Document a note in the patient's electronic medical record with the details of the interaction for physician review.

## COMPETENCY 8: Intra and Inter-Professional Collaboration

74. RJ, a 52 year old male, provides his pharmacist with a new prescription for tadalafil. The pharmacist should advise RJ to seek immediate medical attention if RJ experiences which of the following adverse effects?

- a. Headache
- b. Vomiting
- c. Tachycardia
- d. Extended priapism

75. 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

76. 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

77. According to ISMP Canada, which of the following lists represents drugs which are all high alert medications in adults?

- a. Acetaminophen, heparin, epinephrine
- b. Topiramate, amiodarone, oxytocin
- c. Lidocaine, vincristine, fentanyl
- d. Letrozole, succinylcholine, warfarin

78. 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

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 79 TO 81 INCLUSIVE REFER TO THE FOLLOWING:**

RC is a 69 year old female, 144 cm tall, weighing 75 kg, who has chronic kidney disease due to complications of poorly controlled hypertension. RC's current blood pressure is 142/94 mm Hg. Her current lab work shows the following:

Serum Creatinine:	198 $\mu$ mol/L	
Serum Calcium:	2.4 mmol/L	(normal 2.1-2.6 mmol/L)
Serum Phosphate:	2.01 mmol/L	(normal 0.8-1.45 mmol/L)
Serum Albumin:	39 g/L	(normal 35-50 g/L)
Serum Potassium:	5.6 mmol/L	(normal 3.5-5.2 mmol/L)

RC's medications include the following:

Hydrochlorothiazide 25 mg po daily  
Lisinopril 10 mg po daily  
EC-ASA 81 mg po daily  
Amlodipine 10 mg po daily  
Ferrous sulfate 300 mg, 3 tablets po daily hs

**79.** What is RC's current creatinine clearance?

- a. 23 mL/min
- b. 27 mL/min
- c. 32 mL/min
- d. 37 mL/min

**80.** Despite trying her best to limit dietary phosphate, RC's phosphate level continues to be elevated at 1.96 mmol/L. Which of the following medications is the most appropriate choice to decrease RC's phosphate level?

- a. Calcium carbonate
- b. Aluminum hydroxide
- c. Magnesium hydroxide
- d. Sevelamer hydrochloride

**81.** RC's potassium level is also elevated at 5.6 mmol/L, despite implementing dietary restrictions. She is currently asymptomatic, but the physician would like to lower her potassium level. What is the most appropriate strategy to manage RC's elevated potassium level at this time?

- a. Discontinue use of EC-ASA
- b. Start cholestyramine
- c. Start sodium polystyrene sulfonate
- d. Start insulin regular and IV glucose

**QUESTIONS 82 TO 83 INCLUSIVE REFER TO THE FOLLOWING:**

**JN is a 42 year old, 102 kg, male smoker, who drinks eight to 10 cups of coffee daily. He has been experiencing symptoms of heartburn over the last four weeks; otherwise, he is healthy. The pain has been intermittent throughout the day.**

**82.** The pharmacist should monitor for which of the following, that would require prompt referral of JN to emergency medical care?

- a. Decreased exercise tolerance
- b. Signs of melena
- c. Increased daytime bloating
- d. Nocturnal awakening with dyspepsia

**83.** Following a week of nonprescription therapy, JN returns to the pharmacy because he continues to have symptoms, and he has read on the internet about “extraesophageal symptoms of GERD”. The pharmacist should explain that extraesophageal symptoms of GERD could include:

- a. lower abdominal pain.
- b. headache.
- c. coughing.
- d. nausea.

**QUESTIONS 84 TO 85 INCLUSIVE REFER TO THE FOLLOWING:**

**A hospital pharmacist receives a stat order for IV sulfamethoxazole/trimethoprim q6h. The pharmacist notes that the trimethoprim dose ordered is 20 mg/kg/dose. (The usual dose is 20 mg/kg/day.) The pharmacist then enters the order, generates labels, and requests that a dose be sent to the patient immediately. Three days later, the patient is moved to the intensive care unit, following seizures believed to be related to an excessive dose of antibiotic.**

**84.** The Patient Safety Committee of the hospital has decided to conduct a root cause analysis to investigate this incident. Who of the following should be included on the investigating team?

- a. The dispensing pharmacist
- b. The physician who ordered the incorrect dose
- c. A representative from the hospital's legal department
- d. A representative from pharmacy management

**85.** When the team uses a "root cause analysis" approach, which of the following is the intended outcome?

- a. To submit data to the Institute for Safe Medication Practices
- b. To produce a document that can be kept on file with the hospital's legal counsel
- c. To determine the individual who was at fault for the error
- d. To identify contributing factors for the error

**QUESTIONS 86 and 87 REFER TO THE FOLLOWING:**

**HM is a regular patient 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.**

**86.** 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.

**87.** 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 88 TO 90 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.**

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

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

**89.** 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.

**90.** 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 91 TO 92 INCLUSIVE REFER TO THE FOLLOWING:**

**TK is a 63 year old male with chronic kidney disease (Cr Cl = 29 mL/min/1.73 m<sup>2</sup>) 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.**

**91.** 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.

**92.** 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 93 TO 95 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.**

**93.** 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.

**94.** 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

**95.** 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 96 TO 98 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.**

**96.** 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

**97.** 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

**98.** 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 99 TO 100 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.**

**99.** 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

**100.** 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 101 TO 102 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**

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

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

**102.** Which of FN's medications may worsen her Parkinson disease?

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

**QUESTIONS 103 TO 104 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**

**103.** 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

**104.** 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 105 TO 107 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**

**105.** 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*

**106.** 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.

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

Total phenytoin level = 38  $\mu$ 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?

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

**QUESTIONS 108 TO 110 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.**

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

- lifestyle.
- age.
- medical history.
- family history.

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

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

**110.** 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

**QUESTIONS 111 TO 115 INCLUSIVE REFER TO THE FOLLOWING:**

**TR is a 60 year old male who has hypertension, ulcerative colitis and diabetes. His current medications include: ramipril 5 mg po daily, sulfasalazine 1000 mg po bid and metformin 500 mg po bid. TR approaches the pharmacy to discuss a vaccine to prevent shingles. He is concerned about the condition because a family member has experienced post-herpetic neuralgia (PHN). The vaccine is expensive and TR does not have an insurance plan. A three-year study provided the following results (all statistically significant):**

Outcome	Event Rate		Relative Risk Reduction
	With Placebo	With Vaccine	
<b>Herpes Zoster</b>	<b>3.3%</b>	<b>1.6%</b>	<b>51%</b>
<b>PHN</b>	<b>0.42%</b>	<b>0.14%</b>	<b>66%</b>

**111.** The number needed to treat for the prevention of PHN with use of the vaccine is:

- a. 2.
- b. 4.
- c. 59.
- d. 357.

**112.** Which of the following is the most appropriate explanation for the pharmacist to provide to TR regarding the study results?

- a. The study duration was too short to make conclusions about the benefit of the vaccine.
- b. Patients who received the vaccine were 51% less likely to experience herpes zoster than those who didn't receive it.
- c. Patients who received the vaccine were 34% less likely to experience PHN than those who didn't receive it.
- d. One in every two patients who receive the vaccine will be protected from herpes zoster.

**113.** Three years later, TR develops a rash associated with shingles and has moderate acute pain. In addition to starting oral antiviral therapy, TR should:

- a. receive an analgesic for acute pain.
- b. receive prednisone, for the prevention of PHN.
- c. receive chronic, low-dose acyclovir following resolution of acute symptoms.
- d. receive pregabalin, to decrease the risk of developing PHN.

**114.** In counselling him regarding the antiviral therapy, which of the following statements is the most appropriate additional information for TR?

- a. Monitor his blood glucose more frequently
- b. Monitor his blood pressure more frequently
- c. Avoid wetting the affected skin areas until symptoms are resolved
- d. Avoid contact with individuals who have not had chickenpox

**115.** If TR develops PHN, the most appropriate initial treatment choice for him is:

- a. diclofenac.
- b. nortriptyline.
- c. topiramate.
- d. tramadol.

## Answers to Part I (MCQ) Sample Questions

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