



The Pharmacy Examining Board of Canada

Le Bureau des examinateurs en pharmacie du Canada

Pharmacist Evaluating Examination Sample Questions

The following sample questions are **NOT** intended or designed to be a sample exam, and do **NOT** represent an exact model of the Pharmacist Evaluating Examination in terms of difficulty and proportion of topics. However, individually, these questions are intended to be representative, in **format and phrasing style**, of the types of questions found on the Pharmacist Evaluating Examination. They also illustrate a variety of the subject areas contained in the examination blueprint. Most questions have **five** options with one best answer; some have **four** options with one best answer.

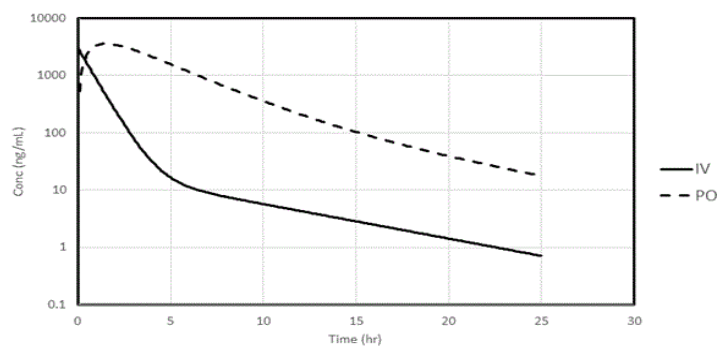
Please note that, although these questions are reviewed and updated annually to ensure currency of content, if guidelines or legislation change in the interim, the answers may not be accurate.

Please see below for the [ANSWERS](#) to these sample questions.

PHARMACEUTICAL SCIENCES

1. Drug A is administered by continuous IV infusion at a rate of 2 mg/min. It has an average half-life of 1.5 h and a volume of distribution of 150 L in an average 70 kg patient. Using this information, what is the steady-state concentration of Drug A in plasma?
 - a. 1.5 mg/L
 - b. 1.7 mg/L
 - c. 2.1 mg/L
 - d. 2.4 mg/L
 - e. 2.7 mg/L
2. Which of the following directly influences the *in vitro* physical stability of an oil-in-water emulsion in which the drug is incorporated in the dispersed phase?
 - a. Amount of preservative added
 - b. Molecular weight of the drug
 - c. Solubility of the emulsifier in water
 - d. Particle size of the internal phase
3. Abatacept acts by:
 - a. stimulating adenosine receptors.
 - b. binding to MHC Class II on B cells.
 - c. inhibiting B cell receptors.
 - d. activating T cell receptors.
 - e. binding CD80/86 on antigen-presenting cells.

4. Which of the following statements is correct regarding the use of monoclonal antibody drug therapies?
- Flu-like symptoms commonly occur at the start of therapy.
 - T cells are stimulated and will initiate a host rejection process.
 - Use of chimeric monoclonal antibodies is associated with increased immunogenicity.
 - Use of Fc fragments avoid raising an immune response against the FAB part.
5. Which of the following medications is a cytochrome P450 inhibitor?
- Phenytoin
 - Trastuzumab
 - Rituximab
 - Itraconazole
 - St. John's wort
6. Two drugs (Drug A and Drug B) were administered at a dose of 10 mg/kg to two subjects. Drug A was administered intravenously and Drug B was administered orally. Plasma samples were collected and concentrations of both drugs were measured. A semilog plot of concentration vs. time is shown below. The concentration of Drug A is represented by the solid line and Drug B by the dashed line.



- Which of the following statements is correct?
- The absorption rate constants for Drug A and Drug B can be estimated from the plot.
 - Drug B has a lower clearance than Drug A.
 - Drug A has a larger distribution volume than Drug B.
 - Drug B has a higher plasma protein binding than Drug A.
 - The volume of distribution for Drug A can be estimated from the plot.

7. Which of the following types of neurotransmitter receptors is most responsible for the decreased risk of extrapyramidal side effects observed with some second-generation antipsychotics relative to first-generation antipsychotics?
- Serotonergic
 - Histaminergic
 - Muscarinic
 - Noradrenergic
 - Alpha-adrenergic
8. The organophosphates commonly found in insecticides are thought to act by which of the following mechanisms?
- Combining with acetylcholine
 - Potentiating the action of acetylcholinesterase
 - Forming a very stable complex with acetylcholinesterase
 - Reacting at the cholinergic receptor
 - Preventing the release of acetylcholine from the nerve ending
9. Which of the following processing methods can best minimize the photodegradation of an active ingredient in a tablet preparation?
- Reduction of lubricants
 - Particle micronization
 - Addition of binders
 - Wet granulation
 - Film coating
10. Several dry powder inhaler formulations for intrapulmonary delivery of steroids contain lactose powder. The lactose is primarily functioning to:
- minimize water uptake by drug particles.
 - mask the bitter taste of the drug.
 - minimize aggregation of drug particles.
 - enhance the stability of the drug.
 - provide lubrication of drug particles.
11. Which of the following is correct about absorption rate constants?
- They can be calculated following subcutaneous dosing of a drug.
 - They can have units of L/h.
 - They represent the rate at which a drug is taken up from the stomach.
 - They represent the rate at which a drug passes through the small intestine.

- 12.** Roflumilast acts by:
- a. inhibiting adenylate cyclase.
 - b. blocking histamine receptors.
 - c. stimulating muscarinic receptors.
 - d. stimulating histone acetyltransferase.
 - e. inhibiting phosphodiesterase-4.
- 13.** Alendronate acts by:
- a. inhibiting osteoblasts.
 - b. inhibiting farnesyl pyrophosphate synthase.
 - c. activating the calcium-sensing receptor.
 - d. decreasing the effectiveness of parathyroid hormone.
 - e. inhibiting calcium reabsorption by the renal tubules.

PHARMACY PRACTICE

- 14.** In adults, community-acquired pneumonia caused by which of the following organisms is associated with the highest mortality rate?
- a. *Pseudomonas aeruginosa*
 - b. *Mycoplasma pneumoniae*
 - c. *Haemophilus influenzae*
 - d. *Streptococcus pneumoniae*
- 15.** DR is in her third trimester of pregnancy and has a history of preterm labour. During a physical exam, she is diagnosed with bacterial vaginosis. She reports that her symptoms are mild. Appropriate management of DR is to:
- a. follow a watchful waiting approach and only initiate treatment if DR develops severe symptoms.
 - b. treat with lactic acid vaginal gel for five days.
 - c. treat with terconazole 0.75% vaginal cream for seven days.
 - d. treat with clindamycin 300 mg po bid for seven days.
 - e. treat with metronidazole 500 mg po bid for seven days.
- 16.** In a blood test for an older patient, what is the most probable physiological outcome consistent with the detection of normal 25(OH) vitamin D levels and undetectable levels of 1,25(OH)₂ vitamin D?
- a. Hypertension
 - b. Osteoporosis
 - c. Hypothyroidism
 - d. Normal aging
 - e. Obesity

- 17.** Which of the following lists represents appropriate antibiotic options that are useful for treating Lyme disease?
- Doxycycline, amoxicillin, ceftriaxone
 - Rifampin, cephalexin, ciprofloxacin
 - Nitrofurantoin, trimethoprim, cloxacillin
 - Norfloxacin, levofloxacin, moxifloxacin
- 18.** A mother presents at the pharmacy with her 8 year old daughter, DW, who has been experiencing a sore throat and nasal congestion for three days. The throat pain has progressively worsened over the last two days and DW reports that it "hurts to swallow". The mother reports that DW's forehead is "a bit warm to touch", but she has not measured her temperature. In trying to rule out strep throat, which of the following is the most appropriate next step for the pharmacist?
- Ask the mother whether DW has had previous episodes of strep throat
 - Ask the mother whether there is any swelling or tenderness of the lymph nodes in DW's neck
 - Examine DW's face and neck for any evidence of a scarlatiniform rash
 - Examine DW's pharynx and tonsils for evidence of an exudate
 - Perform a rapid antigen test in DW to detect the presence of group A streptococcus
- 19.** An ophthalmic side effect that can occur with the use of sildenafil is:
- blue vision.
 - corneal deposits.
 - blepharospasm.
 - pupil fixation.
 - seeing flashing lights.
- 20.** At typical dosing, which of the following antidepressant medications is associated with the highest incidence of nausea?
- Sertraline
 - Fluoxetine
 - Duloxetine
 - Escitalopram
 - Desvenlafaxine
- 21.** Which of the following medications requires monitoring for the adverse effect of dyslipidemia?
- Ciprofloxacin
 - Allopurinol
 - Isotretinoin
 - Ramipril
 - Raloxifene

- 22.** WS, a 30 year old, otherwise healthy male suffering from allergic rhinitis, requests an oral, non-sedating antihistamine. Which of the following antihistamines should the pharmacist recommend?
- Chlorpheniramine
 - Diphenhydramine
 - Hydroxyzine
 - Loratadine
 - Brompheniramine
- 23.** Which of the following is a reasonable goal of therapy for a patient with active inflammatory bowel disease?
- Prevent infection
 - Prevent mortality
 - Maintain quality of life
 - Achieve endoscopic remission
 - Limit the number of colectomies
- 24.** BC is a 25 year old female with depression who has had an adequate trial with each of sertraline and escitalopram. She has tolerated the medications but has only achieved a partial response to escitalopram 20 mg po once daily. Which of the following is the most appropriate next step for BC?
- Increase escitalopram to 40 mg po once daily
 - Add diazepam 5 mg po once daily to escitalopram
 - Add aripiprazole 2 mg po once daily to escitalopram
 - Stop escitalopram and start fluoxetine 20 mg po once daily
 - Stop escitalopram and start venlafaxine XR 150 mg po once daily
- 25.** Lactose intolerance is classified as a(n):
- allergy.
 - enzyme deficiency.
 - transporter abnormality.
 - vitamin deficiency.
- 26.** In the treatment of a patient who has a solid tumour, which of the following side effects typically occurs one to two weeks after chemotherapy?
- Neuropathy
 - Cardiotoxicity
 - Neutropenia
 - Emesis
 - Nephrotoxicity
- 27.** Which of the following is characterized as an autoimmune disorder?
- Alzheimer disease
 - Systemic lupus erythematosus
 - Osteoarthritis
 - Parkinson disease
 - Paget disease

- 28.** A pregnant female presents with a prescription for an antibiotic for treatment of a urinary tract infection. She tells the pharmacist that she doesn't know why the doctor gave her the medication, because she isn't experiencing any symptoms. Her presentation is consistent with which of the following diagnoses?
- a. Cystitis
 - b. Septicemia
 - c. Urinary retention
 - d. Pyelonephritis
 - e. Asymptomatic bacteriuria
- 29.** Which of the following medications requires an auxiliary label regarding avoiding the consumption of grapefruit or grapefruit juice?
- a. Felodipine
 - b. Amlodipine
 - c. Levetiracetam
 - d. Divalproex
 - e. Gabapentin
- 30.** A physician wants to switch a terminally-ill patient from slow release morphine sulfate tablets, 15 mg po bid. If a morphine sulfate 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. 80 mL
 - d. 100 mL
 - e. 120 mL
- 31.** For a pharmacist manager of a pharmacy that strives to provide optimal clinical services, which of the following strategies should be implemented to help reduce barriers to medication adherence?
- a. Ensure that all patients are assessed by a pharmacist upon receiving a new prescription.
 - b. Ensure that all patients are assessed by a pharmacist after taking a medication for at least six months.
 - c. Restrict pharmacy services to those patients who verbally request assistance from a pharmacist.
 - d. Focus resources on reducing the costs of medications for patients.

- 32.** Which of the following statements regarding a disruption in the cold chain for vaccines is correct?
- a. Vaccines exposed to temperatures above the recommended range can have an increase in potency and should not be administered to any patient.
 - b. Vaccines exposed to temperatures below the recommended range should be labelled “do not use” and kept at room temperature until their integrity is determined.
 - c. Inactivated vaccines are more likely than live attenuated vaccines to have a shortened half-life when exposed to high temperatures (up to 37°C).
 - d. Diluents of vaccines that have been frozen can be used as they do not contain any active ingredients.
 - e. Vaccines containing an aluminum adjuvant experience a permanent loss of potency when subjected to freezing.
- 33.** AB is a 13 year old female who recently has been experiencing weight loss, abnormal thirst, and frequent urination. AB’s current signs and symptoms are most suggestive of:
- a. enuresis.
 - b. hyperthyroidism.
 - c. type 1 diabetes mellitus.
 - d. Cushing syndrome.
 - e. anorexia nervosa.
- 34.** EW, a 22 year old female, is going to Mexico on vacation and wants to purchase a sunscreen. Her current medications are: paroxetine 20 mg po qam, doxycycline 200 mg po daily and Alesse® (ethinyl estradiol 20 mcg/levonorgestrel 0.1 mg) po daily. Which of the following is an appropriate recommendation for EW? She should:
- a. use a product that has full coverage of UVA rays and some UVB coverage.
 - b. use a product that has full UVA and UVB coverage, with a maximum SPF of 15.
 - c. use a product with full UVB coverage since she is on a medication which is photosensitizing.
 - d. apply ½ teaspoonful of an appropriate sunscreen to her face and neck at least 30 min prior to sun exposure.
- 35.** In menopause, which of the following is used in combination with estrogen to decrease osteoporotic fracture risk and prevent endometrial hyperplasia?
- a. Tamoxifen
 - b. Raloxifene
 - c. Bazedoxifene
 - d. Exemastane
 - e. Letrozole

36. FT is a 75 year old female with newly diagnosed severe Alzheimer disease. She has a history of peptic ulcer disease. As well, FT has coronary artery disease that is treated with rosuvastatin, lisinopril, and EC-ASA, and asthma that is managed with inhaled fluticasone and salbutamol. FT has a history of bradycardia; her current vital signs include a blood pressure of 120/70 mm Hg and heart rate of 50 bpm. Which of the following is the most appropriate cognitive enhancer for FT?
- Donepezil
 - Memantine
 - Mirtazapine
 - Galantamine
 - Rivastigmine
37. A hospital pharmacist receives a call from a nurse regarding a patient who is now receiving his medications via an enteral feeding tube in the jejunum. For treatment of this patient, which of the following medications should **NOT** be crushed for administration through the enteral feeding tube?
- Omeprazole tablets
 - EC ASA tablets
 - Diltiazem CD capsules
 - Risperidone tablets
 - Metoprolol tablets
38. Which of the following groups is at higher risk of low health literacy? Those who:
- have middle class socioeconomic status.
 - received their university education in another country.
 - are age 65 years or older.
 - speak only one language fluently.

QUESTIONS 39 and 40 REFER TO THE FOLLOWING:

TK is a 63 year old male with chronic kidney disease ($\text{CrCl} = 29 \text{ mL/min/1.73m}^2$) 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.

39. What drug therapy problem should the pharmacist identify for TK?
- Naproxen is inferior to indomethacin for the treatment of acute gout.
 - The duration of naproxen treatment is too short.
 - Naproxen should be avoided in patients taking pravastatin.
 - Naproxen should be avoided in patients with renal dysfunction.
 - The frequency of naproxen dosing is too low.
40. Following successful resolution of the acute episode, TK's physician decides that he should initiate allopurinol. TK should be advised to:
- limit fluid intake.
 - take medication on an empty stomach.
 - use precautions to avoid photosensitivity.
 - report any skin rash or itching to the physician.
 - avoid dairy products or multivitamins within two hours of each dose.

BEHAVIOURAL, SOCIAL AND ADMINISTRATIVE PHARMACY SCIENCES

- 41.** The gross margin for Pharmacy A was higher last year compared to the current year. Which of the following is the best explanation for the change in margin?
- a. More medications expired last year compared to the current year.
 - b. The prescription mix has been weighted to brand name manufacturers for the current year.
 - c. There was an increase in the amount of time spent providing education on nonprescription products during the current year.
 - d. There were more sales in the pharmacy's loss leader category during the current year.
 - e. Patients were more adherent in taking their prescription medications during the current year.
- 42.** At which of the following phases of the medication use process are medication errors most prevalent?
- a. Identifying that a medication is needed
 - b. Prescribing the medication
 - c. Labelling the medication
 - d. Administering the medication
 - e. Monitoring the medication therapy
- 43.** Achieving a high level of herd immunity is an important public health strategy because it:
- a. reduces immunization costs in communities.
 - b. enhances individual immunologic responses.
 - c. facilitates animal handling.
 - d. protects people who cannot be immunized.
 - e. requires fewer booster doses.
- 44.** 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. 25%.
 - c. 40%.
 - d. 50%.
- 45.** 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 statistically significant average decrease in systolic pressure from 160 mm Hg to 141 mm Hg and in 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 efficacy.
 - b. The patients did not achieve guideline targets for hypertension.
 - c. Blood pressure is a surrogate outcome.
 - d. Long-term safety and efficacy were not assessed.
 - e. Placebo is not an appropriate comparator.

- 46.** Which of the following exemplifies the pharmacist professional identity?
- a. To think, act, and feel like a pharmacist.
 - b. To provide the best possible patient care.
 - c. To present oneself consistently in an appropriate manner.
 - d. To complete all tasks associated with prescription drug therapy.
 - e. To encompass the knowledge and skills expected of a pharmacist.
- 47.** The Patented Medicine Prices Review Board reports to the:
- a. provincial Ministers of Health.
 - b. Public Health Agency of Canada.
 - c. Canadian Parliament.
 - d. Canadian Pharmacists Association.
 - e. National Association of Pharmacy Regulatory Authorities.
- 48.** In Canada, which of the following is responsible for initiating a recall of a potentially hazardous drug product?
- a. The Public Health Agency of Canada
 - b. The drug product's manufacturer
 - c. Each provincial ministry of health
 - d. Institute for Safe Medication Practices (ISMP) Canada
 - e. Canada's Drug Agency (CDA)
- 49.** Customer loyalty should be important to a pharmacy manager because it:
- a. reduces the amount of time that pharmacists must spend with patients.
 - b. generates a stream of high revenue from an identifiable customer base.
 - c. protects the pharmacy manager from liability claims arising from dispensing errors.
 - d. is costly to attract new customers.
- 50.** When a clinician ascertains a patient's values and preferences and makes a decision on the behalf of the patient, this is called:
- a. shared decision making.
 - b. informed decision making.
 - c. a clinician-as-a-perfect-agent approach.
 - d. informed consent.
 - e. a paternalistic approach.

Answers to Sample Questions

1. (b)	11. (a)	21. (c)	31. (a)	41. (b)
2. (d)	12. (e)	22. (d)	32. (e)	42. (b)
3. (e)	13. (b)	23. (d)	33. (c)	43. (d)
4. (a)	14. (d)	24. (c)	34. (d)	44. (c)
5. (d)	15. (e)	25. (b)	35. (c)	45. (d)
6. (e)	16. (b)	26. (c)	36. (b)	46. (a)
7. (c)	17. (a)	27. (b)	37. (c)	47. (c)
8. (c)	18. (b)	28. (e)	38. (c)	48. (b)
9. (e)	19. (a)	29. (a)	39. (d)	49. (d)
10. (c)	20. (a)	30. (e)	40. (d)	50. (c)