

Pharmacology

PHA 01

25/07/2024

2:00 PM – 5:00 PM



ADVANCED LEVEL NATIONAL EXAMINATIONS, 2023-2024

SUBJECT: Pharmacology

DURATION: 3 HOURS

Instructions to candidates:

- 1) Write your names and index number on the answer booklet as written on your registration form and **DO NOT** write your names and index number on additional answer sheets if provided.
- 2) Do not open this question paper until you are told to do so.
- 3) This paper consists of **THREE** sections: **A**, **B** and **C**.

Section A: Attempt **all** questions. **(55 marks)**

Section B: Attempt **all** questions. **(25 marks)**

Section C: Attempt only **two** questions. **(20 marks)**

- 4) Use only a **blue** or **black** pen.

Section A: Attempt all questions. (55 marks)

- 1) i) Pick out the correct definition of a toxic dose: **(2 marks)**
- a) The amount of substance to produce the minimal biological effect.
 - b) The amount of substance to produce effects hazardous for an organism.
 - c) The amount of substance to produce the necessary effect in most of patients.
 - d) The amount of substance to fast creation of high concentration of medicine in an organism.
- ii) What does “drug potency” mean? **(2 marks)**
- a) A measure of how tightly a drug bind to plasma proteins
 - b) A measure of how tightly a drug bind to a receptor
 - c) A measure of inhibiting potency of a drug
 - d) An index of how much drug must be administered to elicit a desired response.
- iii) The term “drug efficacy” means: **(2 marks)**
- a) Two drugs combined with one another to form an inactive compound
 - b) Two drugs combined with one another to form a more active compound
 - c) The greatest maximal response that can be produced from a particular drug or defined as the largest effect that a drug can produce
 - d) Two drugs combined with one another to form a more water-soluble compound.
- 2) i) A right sequence of pharmacokinetic processes for a drug given by oral route is: **(2 marks)**
- a) Absorption, Distribution, Biotransformation and Excretion
 - b) Distribution, Absorption, Biotransformation and Excretion
 - c) Biotransformation, Absorption, Distribution, and Excretion
 - d) Excretion, Absorption, Distribution, and Metabolism
- ii) During drug distribution, the drugs are bound to which of the following? **(2 marks)**
- a) Lipids in blood
 - b) Proteins in the blood
 - c) Vitamins in blood
 - d) Minerals in blood

3) i) Which one of the following assertions describes a teratogenic drug? **(2 marks)**

- a) The drug that can produce severe adverse reactions
- b) The drug that can impact negatively the elderly
- c) The drug that can cause congenital malformation
- d) The drug that have a broad spectrum of activity

ii) Which one of the following statements is true with regard to the meaning of selective toxicity of an antibiotic? **(2 marks)**

- a) The ability of the anti-infectious agent to affect both microbial and host cells at the same time.
- b) The ability of anti-infectious agent to affect the host cell with few effects to the microbial cell.
- c) The ability of an anti-infectious agent to affect the bacterial cell wall since the human cell does also have the cell wall.
- d) The ability of the anti-infectious agent to affect the infectious agent's cell without affecting the host (human) cell.

4) i) Parenteral routes of drug administration are: **(2 marks)**

- a) Intravenous, intramuscular, subcutaneous
- b) Intravenous, intramuscular, intranasal
- c) Intravenous, sublingual, transdermal
- d) Transdermal, subcutaneous, by inhalation

ii) Which of the following is the correct angle to use while administering the drugs intramuscularly? **(2 marks)**

- a) 50%
- b) 75%
- c) 90%
- d) 45%

5) i) During drug administration, the nurse needs to ensure that all the RIGHTs of medication administration are respected. Therefore, while applying the right time, medications should be prescribed as closely to the time of administration as possible, and nurses should not deviate from this time by: **(2 marks)**

- a) More than two hours to avoid consequences
- b) More than three hours to avoid consequences

- c) More than one hour to avoid consequences
- d) More than half an hour to avoid consequences

ii) Which of the following statements best describes a STAT order? **(2 marks)**

- a) The drug is administered when, in the nurse's judgment, the client's condition requires it such as in case of pain management.
- b) These are one-time medications or orders that require the administration of drops or even tablets over a specified short period of time.
- c) An order for a single dose of medication to be given immediately, often in emergency situations to modify a serious physiological response.
- d) These are the orders for drugs that are administered routinely as specified until the order is canceled by another order.

iii) In which of the following types of medication errors would a medication error which involves incorrect drug product selection based on indications be classified?

(2 marks)

- a) Dispensing errors
- b) Prescribing errors
- c) Transcription errors
- d) Monitoring errors

6) i) Diclofenac injection is available as an ampule of 75mg/3 ml. This means that the concentration is 25 mg/ml or 75 mg/ 3 ml. How much volume of liquid will the client receive when the prescription is to give only 50 mg?

(2 marks)

- a) 2.5 ml
- b) 2 ml
- c) 4 ml
- d) 5 ml

ii) A syrup is available as 25mg/5ml and the patient must be given 50mg. What volume in milliliters will be given?

(2 marks)

- a) 15 ml
- b) 5 ml
- c) 10 ml
- d) 30 ml

- iii) The patient is to receive 60 mg of gentamicin BID intramuscularly. The available ampules are 80mg dissolved in 2 mL each. How many milliliters will the associate nurse draw from the ampule at each drug administration (dose)? **(2 marks)**
- a) 1,2 ml
 - b) 2 ml
 - c) 5 ml
 - d) 1,5 ml
- 7) All of the following are the mechanisms of action of antibiotics, EXCEPT: **(2 marks)**
- a) Inhibiting bacterial nucleic acid synthesis
 - b) Alter the bacterial cell membranes
 - c) Inhibit bacterial protein synthesis
 - d) Acting as bacterial metabolites
- 8) a) Explain the mechanism of action of Non-steroidal anti-inflammatory drugs. **(2 marks)**
- b) Why do we need to use adjuvant with painkillers in pain management? **(2 marks)**
- 9) i) Which of the following groups of drugs is used to treat peptic ulcer diseases? **(2 marks)**
- a) Antifungals
 - b) Antivirals
 - c) Analgesics
 - d) Antacids.
- ii) Which one among the following conditions reflects a contraindication of antispasmodic drugs? **(2 marks)**
- a) Irritable bowel syndrome
 - b) Biliary colic
 - c) Pancreatitis
 - d) Gastrointestinal obstruction
- iii) Which one of the following laxatives acts without causing the systemic effect? **(2 marks)**
- a) Bisacodyl
 - b) Lactulose
 - c) Glycerin
 - d) Magnesium citrate

- 10) i) Which of the following describes the mechanism of action of calcium channel blockers? **(2 marks)**
- a) Block the effects of the sympathetic nervous system are useful in blocking many of the compensatory effects
 - b) Inhibit the formation of angiotensin II and reduces vascular resistance
 - c) They increase excretion of water, sodium, chloride, and potassium.
 - d) They relax and open up narrowed blood vessels
- ii) Which drug among the following is a potassium sparing diuretic? **(2 marks)**
- a) Furosemide
 - b) Captopril
 - c) Aldactone
 - d) Diuril
- iii) The medical management of diabetes mellitus is aimed at: **(2 marks)**
- a) Regulating blood glucose levels.
 - b) Controlling caloric intake.
 - c) Increasing exercise levels.
 - d) Decreasing fluid loss.
- 11) A 40-year-old female patient consults a health facility where you are placed in the clinical placement. It is a known case of prehypertension who was on lifestyle measures and on her arrival, her blood pressure is 150/90 mmHg. She is then screened for diabetes, and the glycaemia shows that the patient meets the criteria to be diagnosed as a diabetic patient. The fellow associate nurse student in the clinical placement wants you to advice on the class of first line antihypertensive medications.
- i) What class of antihypertensive medications can you advise to prescribe for this patient according the national guidelines? **(2 marks)**
- a) Diuretics
 - b) Calcium channel blockers
 - c) Angiotensin converting enzyme inhibitors
 - d) Angiotensin II receptor antagonists/blockers

ii) All of the following are nursing consideration for this patient management, EXCEPT:

(2 marks)

- a) Assess the baseline status before beginning therapy to determine any potential adverse effects
- b) Ensure that the female patient is pregnant before beginning therapy, and suggest the use of barrier contraceptives while she is taking these drugs
- c) Monitor for adverse effects
- d) Assess for the contraindications and cautions before administration. These include allergies, impaired kidney or liver functions.

12) Describe different forms of gaseous drug dosage.

(3 marks)

Section B: Attempt all questions (25 marks)

13) A patient present with a suspected case of schistosomiasis. Which anthelmintic drug would you prescribe, and what precautions would you advise the patient to take during treatment?

(5 marks)

14) How would you apply the use of topical versus systemic antifungal medications in the treatment of fungal infections?

(5 marks)

15) Compare and contrast the mechanisms of action of chloroquine and artemisinin-based combination therapies (ACTs).

(5 marks)

16) What are the potential benefits and risks of starting Antiretroviral treatment (ART) early after HIV diagnosis in adolescents and adults?

(5 marks)

17) As an associate nurse student in the clinical attachment, you receive a patient complaining of difficulty passing stool. In your assessment, you realize that the patient usually has a sedentary life and drinks fluids less frequently.

a) What is the diagnosis to this condition?

(2 marks)

b) Which categories of drugs used to treat the above condition, and give one example for each category.

(3 marks)

Section C: Attempt only two questions (20 marks)

- 18) Design a public health campaign to educate the public about the responsible use of antibiotics. **(10 marks)**
- 19) Design a patient education brochure that outlines how to safely use over-the-counter fever reducers, including when to seek medical attention. **(10 marks)**
- 20) A 44-year-old patient is requesting advice for medication for occasional headache pain and asks the nurse about acetaminophen (Tylenol). Even though the drug is available over the counter, what teaching should the nurse provide to the patient about his choice of acetaminophen? **(10 marks)**

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