

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF SCIENCE IN NURSING**

NURS 217: PHARMACOLOGY I

STREAMS: BSC (NURS) YIS2

TIME: 2 HOURS

DAY/DATE: MONDAY 03/12/2018

8.30 AM – 10.30 AM

INSTRUCTIONS:

- **Do not write anything on the question paper.**
- **Mobile phones and any other reference materials are NOT allowed in the examination room.**
- **The paper has three sections. Answer ALL questions**
- **All your answers for Section I (MCQs) should be on one page.**
- **Number ALL your answers and indicate the order of appearance in the space provided in the cover page of the examination answer booklet.**

MULTIPLE CHOICE QUESTIONS (20Marks)

1. What does the term “bioavailability” mean?
 - a) Plasma protein binding degree of substance
 - b) Permeability through the brain-blood barrier
 - c) Fraction of an uncharged drug reaching the systemic circulation following any route administration
 - d) Amount of a substance in urine relative to the initial doze
2. Biotransformation of the drugs is to render them:
 - a) Less ionized
 - b) More pharmacologically active
 - c) More lipid soluble
 - d) Less lipid soluble
3. For the calculation of the volume of distribution (Vd) one must take into account:
 - a. Concentration of a substance in plasma

- b. Concentration of substance in urine
 - c. Therapeutical width of drug action
 - d. A daily dose of drug
4. Chloramphenicol has the following unwanted effects:
- a. Nephrotoxicity
 - b. Pancytopenia
 - c. Hepatotoxicity
 - d. Ototoxicity
5. Elimination is expressed as :
- a) Rate of renal tubular reabsorption
 - b) Clearance speed of some volume of blood from substance
 - c) Time required to decrease the amount of drug in plasma by one-half
 - d) Clearance of an organism from a xenobiotic
6. Idiosyncratic reaction of a drug is:
- a) A type of hypersensitivity reaction
 - b) A type of drug antagonism
 - c) unpredictable, inherent, qualitatively abnormal reaction to a drug
 - d) Quantitatively exaggerated response
7. Which of the following describes minimal effective concentration (MEC)?
- a) The minimal drug plasma concentration that can be detected
 - b) The minimal drug plasma concentration to reach therapeutic levels
 - c) The minimal drug plasma concentration to interact with receptors
 - d) The minimal drug plasma concentration to produce effect
8. Therapeutic index (TI) is:
- a. A ratio used to evaluate the safety and usefulness of a drug for indication
 - b. A ratio used to evaluate the effectiveness of a drug
 - c. A ratio used to evaluate the bioavailability of a drug
 - d. A ratio used to evaluate the elimination of a drug
9. Which of the following can produce a therapeutic response? A drug that is:
- a) Bound to plasma albumin
 - b) Concentrated in the bile
 - c) Concentrated in the urine
 - d) Unbound to plasma proteins
10. What is the type of drug-to-drug interaction which is the result of interaction at receptor, cell, enzyme or organ level?
- a) Pharmacodynamic interaction
 - b) Physical and chemical interaction
 - c) Pharmaceutical interaction

d) Pharmacokinetic interaction

11. Half life ($t_{1/2}$) is the time required to:

- a) Change the amount of a drug in plasma by half during elimination
- b) Metabolize a half of an introduced drug into the active metabolite
- c) Absorb a half of an introduced drug
- d) Bind a half of an introduced drug to plasma proteins

12. Which of the following statements best reflects the nurse's understanding of cultural influences on drug therapy and other health practices?

- a. Some cultures believe cold drinks are unhealthy for the sick person and should be avoided
- b. Regardless of one's cultural background, it is crucial to always adhere to recommended medical practices
- c. Most cultures are fairly standard in reference to the use of medications during illness
- d. Dietary habits and practices can be of little value to the care of an ill adult

13. Give the definition for a therapeutical dose:

- a. The amount of a substance to produce the minimal biological effect
- b. The amount of a substance to produce effects hazardous for an organism
- c. The amount of a substance to produce the required effect in most patients
- d. The amount of a substance to accelerate an increase of concentration of medicine

14. Which of the following drugs belonging to antibiotics-monobactams:

- a) Ampicillin
- b) Bicillin-5
- c) Aztreonam
- d) Imipenem

15. Which of the following describes an agonist?

- a) Any substance that brings about a change in biologic function through its chemical action
- b) A specific regulatory molecule in the biologic system where a drug interacts
- c) A drug that binds to a receptor and stimulates cellular activity
- d) A drug that binds to a receptor and inhibits or opposes cellular activity

16. All of the following antibiotics are aminoglycosides, EXCEPT:

- a. Gentamycin
- b. Streptomycin
- c. Clindamycin
- d. Neomycin

17. Which of the following is the most relevant use of therapeutic index?

- a) Guide for toxicity in therapeutic the setting
- b) Multiple measures of effectiveness are possible (e.g. aspirin)

c) Measure of impunity with which an overdose may be tolerated

d) Toxicities may be idiosyncratic (e.g. propranolol in asthmatics)

18. Antibiotics interfering with protein synthesis includes all EXCEPT:

- a. Beta-lactam antibiotics
- b. Tetracyclines
- c. Aminoglycosides
- d. Macrolides

19. Disinfectants are:

- a) Strong chemical agents that inhibit or kill micro-organisms
- b) Agents with sufficient toxicity for host cells
- c) They kill both vegetative cells and spores
- d) A process intended to kill or remove all types of micro-organisms including spores and include viruses

20. Pharmacodynamics involves?

- a) Information about main mechanisms of drug absorption
- b) Information about unwanted effects
- c) Information about biological barriers
- d) Information about excretion of a drug from the organism

SHORT ANSWER QUESTIONS (40 marks)

1. a. Define adverse drug reaction (1mark)
- b. State two types of adverse reactions (2 marks)
2. a. Define ‘**Acupuncture**’ and briefly explain the role of acupuncture in modern medicine (4marks)
- b. State four reasons why some people would prefer to use complementary (alternative) medicine rather than using contemporary medicine. (4marks)
3. Explain two situations in which it is better to use bactericidal than bacteriostatic drugs (4marks)
4. With examples, state the (3) mechanisms of action of antimicrobials (6marks)
5. a. Explain ways through which route of drug administration affects the bioavailability of drug (4marks)
- b. Differentiate between the two phases of drug metabolism (4marks)
6. a. **State the two acts** of parliaments that control and regulate drugs/poisons in Kenya (2marks)

b. Explain what each addresses (4marks)

7. Using dose response curve, explain the difference between potency and efficacy of a drug. (5marks)

LONG ANSWER QUESTIONS (40marks)

1a. Under the topic –Penicillins

- a. Outline four classes of penicillins giving example of a drug in each class (6marks)
- b. State their mechanism of action (1mark)
- c. Outline three (3) indications (3marks)
- d. List two (2) side effects. (2marks)

b) Using penicillin explain the pharmacokinetic processes (10 marks)

2. Mr Y has been admitted in medical ward with a fever, chest pains, difficulty in breathing and cough. A diagnosis of pneumonia is made. Using nursing process explain medical management of Mr Y till discharge. (12marks)

b. Briefly explain three main ways through which the drugs given to Mr Y are excreted from the body. (6marks)
