



MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya

Tel: +254(0) 799 529 958, +254(0) 799 529 959, + 254 (0) 712 524 293,

Website: info@must.ac.ke Email: info@must.ac.ke

University Examinations 2023/2024

FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF CLINICAL MEDICINE AND COMMUNITY HEALTH

CCM 3223: GENERAL PHARMACOLOGY

DATE: APRIL 2024

TIME: 3 HOURS

INSTRUCTIONS:

Answer *All* questions

Ensure that all your answers are properly numbered

Part I multiple Choice Questions (MCQ): Write the correct answer on the space provided in the answer booklet. Each MCQ is one mark

Part II: Short Answer Questions – Answer questions following each other on the answer booklet

Part III: Long Answer Questions – Answer each question on the answer booklet

SECTION A: MCQ (20 MARKS)

1. A hydrophilic medicinal agent has the following property:
 - A. Low ability to penetrate through the cell membrane lipids
 - B. Penetrate through membranes by means of endocytosis
 - C. Easy permeation through the blood-brain barrier
 - D. High reabsorption in renal tubules
 2. What does the term "bioavailability" mean?
 - A. Plasma protein binding degree of substance
 - B. Permeability through the brain-blood barrier
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Page 1

- 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
3. Parenteral administration:
- A. Cannot be used with unconsciousness patients
 - B. Generally results in a less accurate dosage than oral administration
 - C. Usually produces a more rapid response than oral administration
 - D. Is too slow for emergency use
4. Biological barriers include all except:
- A. Renal tubules
 - B. Cell membranes
 - C. Capillary walls
 - D. Placenta
5. What is the reason of complicated penetration of some drugs through brain-blood barrier?
- A. High lipid solubility of a drug
 - B. Meningitis
 - C. Absence of pores in the brain capillary endothelium
 - D. High endocytosis degree in a brain capillary
6. The term "biotransformation" includes the following:
- A. Accumulation of substances in a fat tissue
 - B. Binding of substances with plasma proteins
 - C. Accumulation of substances in a tissue
 - D. Process of physicochemical and biochemical alteration of a drug in the body
7. Metabolic transformation (phase 1) is:
- A. Acetylation and methylation of substances
 - B. Transformation of substances due to oxidation, reduction or hydrolysis
 - C. Glucuronide formation

- D. Binding to plasma protein
8. . In case of liver disorders accompanied by a decline in microsomal enzyme activity the duration of action of some drugs is:
- A. Decreased
 - B. Enlarged
 - C. Remained unchanged
 - D. Changed insignificantly
9. Half life ($t_{1/2}$) doesn't depend on:
- A. Biotransformation
 - B. Time of drug absorption
 - C. Concentration of a drug in plasma
 - D. Rate of drug elimination
10. What does "affinity" mean?
- A. A measure of how tightly a drug binds to plasma proteins
 - B. A measure of how tightly a drug binds to a receptor
 - C. A measure of inhibiting potency of a drug
 - D. A measure of bioavailability of a drug
11. If an agonist can produce maximal effects and has high efficacy it's called:
- A. Partial agonist
 - B. Antagonist
 - C. Agonist-antagonist
 - D. Full agonist
12. An antagonist is a substance that:
- A. Binds to the receptors and initiates changes in cell function, producing maximal effect
 - B. Binds to the receptors and initiates changes in cell function, producing submaximal effect
 - C. Interacts with plasma proteins and doesn't produce any effect
 - D. Binds to the receptors without directly altering their functions

13. The substance binding to one receptor subtype as an agonist and to another as an antagonist is called:
- A. Competitive antagonist
 - B. Irreversible antagonist
 - C. Agonist-antagonist
 - D. Partial agonist
14. Tick the second messenger of G-protein coupled receptor
- A. Adenylcyclase
 - B. Sodium ions
 - C. Phospholipase C
 - D. cAMP

SECTION B:

1. Define the following terms (4 marks)
- a) Pharmacology
 - b) First pass metabolism
 - c) Prodrug
 - d) Therapeutic Index of a drug
2. State 4 major macromolecular targets of drug action. (4 marks)
3. Compare between drug potency and therapeutic efficacy (4 marks)
4. In drug receptor interactions differentiate between an inverse agonist and a partial agonist (4 marks)
5. Outline the sequential stages of drug development. (5 marks)
6. Describe the 5 drug pregnancy risk categories. (5 marks)
7. Drugs have a specific kind of nomenclature. Citing examples, explain the three names that a drug can go by. (6 marks)
8. Explain four effects of potential drug interactions (8 marks)

SECTION C

- 1) A. Explain the disadvantages of the parenteral route of drug administration (10 marks)
B. With examples, list the different formulation of drugs available in the market (10 marks)
- 2) Discuss the drug management cycle? (20 marks)