



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

SECOND YEAR SECOND SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE in Optometry and Vision sciences**

(Paper A: MAIN PAPER)

COURSE CODE: BML 202

COURSE TITLE: General Pharmacology

DATE: 18/4/2023

TIME: 8.00-10.00 PM

Instructions

Time 2 hours

Answer all questions

Section A comprise of 20 MCQs 1 mark each

Section B comprise 9 short answer questions: a total of 40 marks

Section C comprises of 3 long essay questions: 20 marks each

SECTION A: multiple choice questions (MCQs)

1. Drugs that are administered IV:
 - A. Are rapidly absorbed
 - B. Are subject to first-pass metabolism
 - C. Have 100% bioavailability
 - D. Are rapidly metabolized by the liver

2. Which of the following best describes the effect of a competitive antagonist on the dose-response curve of an agonist?
 - A. Non-parallel left shift
 - B. Non-parallel right shift
 - C. Parallel left shift
 - D. Parallel right shift

3. Most drugs gain entry to cells by:
 - A. Passive diffusion with zero-order kinetics
 - B. Passive diffusion with first-order kinetics
 - C. Active transport with zero-order kinetics
 - D. Active transport with first-order kinetics

4. Drug biotransformation/metabolism takes place primarily in the:
 - a. Liver
 - b. Heart
 - c. Kidneys
 - d. lungs

5. What is a synergistic drug effect?
 - a. an increase in the action of one of the two drugs being given
 - b. a neutralizing drug effect
 - c. a comprehensive drug effect
 - d. an effect greater than the sum of the separate effects of two or more drugs

6. In which of the following organs/tissues are M2 cholinergic receptor subtypes mainly found?
 - a) Heart
 - b) Glands

- c) Smooth muscle
- d) Endothelium

7. Which one of the following cholinomimetics activates both muscarinic and nicotinic receptors?

- a) Lobeline
- b) Pilocarpine
- c) Nicotine
- d) Bethanechol

8. Which one of the following is caused by parasympathomimetic drugs:

- a) Bronchodilation
- b) Mydriasis
- c) Bradycardia
- d) Constipation

9. Which of the following directly-acting cholinomimetics has mainly muscarinic activity?

- a) Bethanechol
- b) Carbachol
- c) Acetylcholine
- d) None of the above

10. Indirectly-acting cholinomimetic agents produces cholinergic effects by:

- a) Binding to and activation of muscarinic or nicotinic receptors
- b) Inhibiting hydrolysis of endogenous acetylcholine
- c) Stimulating the action of acetylcholinesterase
- d) inhibiting the release of acetylcholine from storage sites

11. Which one of the following drugs is a cholinesterase activator?

- a) Pralidoxime
- b) Edrophonium
- c) Pilocarpine

- b) Ketoprofen
- c) Dexketoprofen
- d) Dexamethasone

18. Which of the following is classified as an antihyperlipidemic agent?

- a) Furosemide
- b) Diclofenac
- c) Atorvastatin
- d) amiloride

19. All of the following are local anaesthetic agents EXCEPT

- a) Lidocaine
- b) Propofol
- c) Bupivacaine
- d) Mepivacaine

20. Which one of the following is NOT an expected pharmacological response of an histamine 2 (H₂) antagonist?

- a) Increased gastric secretion
- b) Decreased gastric secretion
- c) Increased heart rate
- d) Increased myocardial infarction

SECTION B: SAQs: 40 marks; Answer all

1. Outline the key steps in rational prescription writing **(7 marks)**
2. State four advantages of topical ocular drug administration **(4 marks).**
3. Define and describe the importance of the following pharmacokinetic parameters in pharmacotherapy.
 - a. Elimination half-life ($t_{1/2}$) **(1mark)**
 - b. Volume of distribution (V_d) **(1mark)**
 - c. Clearance (Cl) **(1mark)**
4. List five general ways to avoid or minimize adverse drug reactions among patients. **(4marks)**

5. List six signs and symptoms of toxicity due acetylcholinestrerase inhibitors. **(6 marks)**
6. Name four types of adrenoceptors and outline their mechanisms of action. **(6 marks)**
7. Give four factors that affect absorption of orally administered drugs **(4marks)**
8. Explain the two types of adverse drug reactions **(4 marks)**
9. Outline the four rights of drug administration **(2 marks)**

SECTION C: LAQs:Answer ANY TWO: (40 marks)

1. Ibuprofen coated tablet is administered orally to treat ocular pain and inflammation, describe in detail the four key pharmacokinetic processes which the drug undergo over the course of time and the key factors affecting each of these processes **(20 marks)**
2. Discuss the parenteral routes of drug administration, including specific advantages and disadvantages of each route **(20Marks)**
3. **A)** Describe the key steps involved in cholinergic neurotransmission. **(6 marks)**
- B)** Discuss the pharmacological effects of non-selective muscarinic receptor antagonists in any **SEVEN** organs or systems . **(14 marks)**

- c) Smooth muscle
- d) Endothelium

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11. Which one of the following drugs is a cholinesterase activator?

- a) Pralidoxime
- b) Edrophonium
- c) Pilocarpine

d) Isoflurophate

12. Which one of the following is an indirectly-acting sympathomimetics?

- a) Epinephrine
- b) Norepinephrine
- c) Ephedrine
- d) Methoxamine

13. Which one of the following effects occur as a result of direct beta1-adrenoreceptor stimulation?

- a) Bronchodilation
- b) Vasodilatation
- c) Tachycardia
- d) Bradycardia

14. Alpha-1 agonists cause reflex bradycardia, which can be blocked by:

- a) Atenolol
- b) Atropine
- c) Mirtazapine
- d) Phenylephrine

15. An ophthalmologist administers an ocular-acting drug that causes mydriasis, but has no effect on accommodation. What is the most likely identity of this drug?

- a) Mecamylamine
- b) Neostigmine
- c) Phenylephrine
- d) Tropicamide

16. Which of the following is not a selective COX 2 non-steroidal anti-inflammatory drug (NSAID)

- a) Celecoxib
- b) Etoricoxib
- c) Rofecoxib
- d) Ibuprofen

17. Which of the following drugs is not a non-steroidal anti-inflammatory drug (NSAID)?

- a) Flurbiprofen