



# THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

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**MAIN EXAMINATION**

**SEPTEMBER – DECEMBER 2019 TRIMESTER**

**FACULTY OF SCIENCE**

**DEPARTMENT OF CHEMISTRY**

**REGULAR PROGRAMME**

**CHEM 401: APPLIED ORGANIC CHEMISTRY I**

**Date: DECEMBER 2019**

**Duration: 2 Hours**

**INSTRUCTIONS: Answer Question ONE and any other Two Questions**

- Q1. a) Define/explain each of the following terms:  
i). Pharmacodynamics  
ii). Antibiotics  
iii). Protagonists  
iv). Receptor  
v). Onset action of a drug. **(10 Marks)**
- b) Explain the basis of the mechanism of action of a drug. **(6 Marks)**
- c) Explain how drugs affect the functioning of the body through  
i). Side effects  
ii). Secondary effects  
iii). Toxic effects. **(10 Marks)**
- d) What do you mean by the term “action of a drug”? **(4 Marks)**
- Q2. a) Explain how drugs produce their effects through bacterial and cytotoxic action? **(6 Marks)**
- b) Explain how lead poisoning in blood is removed by the use of antidote calcium disodium edentate. **(4 Marks)**

- c) Explain the following with respect to drug-receptor mechanism:  
i). Agonist  
ii). Partial agonist  
iii). Antagonist  
**(6 Marks)**
- d) How do antimetabolites like sulphonamides perform their bacteriostatic function in the body?  
**(4 Marks)**
- Q3. a) Explain briefly each of the following terms:  
i). Biotransformation  
ii). Bioavailability  
iii). Active principle of a drug  
iv). Clearance  
v). Maximal effect of a drug.  
**(10 Marks)**
- b) What are the major processes that are involved in the excretion of drugs through the kidneys?  
**(6 Marks)**
- c) Explain what are anaesthetics and give two examples with appropriate structures.  
**(4 Marks)**
- Q4. a) Discuss the factors controlling the absorption of drugs in stomach and in the liver.  
**(8 Marks)**
- b) Define each of the following terms:  
i). Therapeutic index  
ii). Potency of a drug  
iii). Onset of a drug  
**(5 Marks)**
- c) Explain the factors that affect the rate of drugs absorption.  
**(6 Marks)**
- Q5. a) Show with the help of equations, how aspirin is manufactured.  
**(4 Marks)**
- b) What are antineoplastic agents?  
**(3 Marks)**

- c) Explain the following terms:
- i). Tolerance of a drug
  - ii). Drug resistance
  - iii). Tachyphylaxis
  - iv). Cross tolerance

**(8 Marks)**

- d) Explain briefly the physical and chemical basis of drug antagonism.

**(5 Marks)**

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