

CHUKA



UNIVERSITY

SUPPLEMENTARY/ SPECIAL EXAMINATIONS

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

BIOC 222: XENOBIOTIC METABOLISM AND DRUG DEVELOPMENT

STREAMS: BSC (BIOC)

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 03/02/2021

8.30 AM – 10.30 AM

INSTRUCTIONS:

Answer question one and any other two questions

Question 1 (Compulsory) (30 marks)

- a) Outline 5 factors that influence absorption of a toxicant in man. (5 marks)
- b) Highlight 5 differences between acute and chronic toxicity. (5 marks)
- c) Briefly describe various teratogenicity and mutagenicity tests done on new drug molecules. (5 marks)
- d) Explain five applications of the knowledge in toxicology (5 marks)
- e) Briefly describe 3 major hurdles faced in drug discovery and development in the present day. (6 marks)
- f) Describe the application of dose-response curves in the study of toxicity of xenobiotics. (4 marks)

Question 2 (20 marks)

- a) Using suitable flowchart describe the fate and effects of toxicants in the body. (10 marks)
- b) Define toxicodynamics. (1 mark)
- c) Using a suitable diagram, describe reaction types between a toxicant and target molecule, and indicate possible outcomes of this interaction. (9 marks)

Question 3 (20 marks)

- d) Describe the processes involved the clinical trials of new drug molecules. (10 marks)
- e) Describe the various membrane transport of xenobiotics. (10 marks)

Question 4 (20 marks)

- a) By use of a well labeled monotonic dose response curve, describe NOAEL, LOAEL, ED50, LD50 and potency. (10 marks)
 - b) Discuss any 5 conjugation reactions involved in phase II reactions of xenobiotic metabolism. (10 marks)
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