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: WEDNESDAY03/02/2021 **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)
