CHUKA  **UNIVERSITY**

UNIVERSITY 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: TUESDAY 14/04/2020 **11.30 AM – 1.30 PM**

INSTRUCTIONS:

*Answer question **one** and **anyother two** questions*

Question 1 (Compulsory) (30 marks)

a) Outline 5 factors which influence the dose of xenobiotic entering into the human body. (5 marks)

b) Briefly describe the teratogenicity and mutagenicity tests done for new drug molecules. (5 marks)

c) Identify any 6 factors influencing the difference in response to a xenobiotic in a population (individual susceptibility). (6 marks)

d) (i) Define a toxin? (1 Mark)

(ii) Differentiate between a mutagen and a teratogen. (2 Marks)

e) Briefly describe 3 major hurdles in the drug discovery and development faced in the present day. (3 marks)

f) Highlight the differences between acute and chronic toxicity resulting from xenobiotic exposure. (4 marks)

g) Highlight 4 factors that affect membrane transport of a xenobiotic. (4 marks)

Question 2(20 marks)

a) Describe in detail how human beings get exposed to xenobiotics. (10 marks)

b) Discuss any 5 reactions involving cytochrome P450 and give examples of substrates involved in each of the reaction. (10 marks)

Question 3(20 marks)

a) Describe the processes involved in the clinical trials of new drug molecules.(10 marks)

b) Describe the various membrane transport mechanisms 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 reactions of xenobiotic metabolism. (10 marks)
