CHUKA UNIVERSITY

Knowledge is Wealth (*Sapientia divitia est*)

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DEPARTMENT OF PHYSICAL SCIENCES

EXAMINATION FOR THE AWARD OF BACHELOR OF SCIENCE IN BIOCHEMISTRY

BIOC 100: INTRODUCTION TO BIOCHEMISTRY AND BIODIVERSITY

INSTRUCTIONS:

Answer question ONE and any other TWO questions

Do not write on the question paper

QUESTION ONE

a) (i). Define Biochemistry and state any TWO of its major achievements to science and medicine. (3 marks)

(ii). Describe the 2 major types of fatty acids giving an example of each. (2 marks)

b) (i). Describe structural hierarchy in the molecular organization of cells. (3 marks)

(ii). Giving examples, distinguish between nucleotide and nucleoside. (2 marks)

c) (i). Define the following terms and state their significance: (4 marks)

Biodiversity

Extinction

(ii). State the current single greatest threat to biodiversity. (1 mark)

d) Sponges (phylum *Porifera*) are the simplest of all animals. Describe (5) unique features of sponges. (5 marks)

e) State functions of carbohydrates in living organisms (5 marks)

f) (i). Mention two major clades of **annelids**. (2 marks)

(ii). Differentiate between angiosperms and gymnosperms. (2 marks)

(ii). State the type of bond which link amino acids to form proteins (1 mark)

QUESTION TWO

a) Discuss the various levels of protein structure. (8 marks)

b) Describe the significance of protein in an animal body. (6 marks)

c) Explain the three levels of biological diversity (6 marks)

QUESTION THREE

a) Outline the functions of nucleotides. (4 marks)

b) Describe the biological functions of lipids. (4 marks)

c)

i. State four key adaptations for life on land that distinguish the main lineages of the plant kingdom. (4 marks)

ii. Briefly describe the evolutionary history of the plant kingdom. (8 marks)

QUESTION FOUR

a) Briefly describe the two most important **mass extinctions**. (10 marks)

b) Explain the major causes of loss of biodiversity (10 marks)