

CHUKA

UNIVERSITY



UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DIPLOMA IN BIOLOGY

BIOC 0113: BASIC BIOCHEMISTRY

STREAMS:

TIME: 2 HOURS

DAY/DATE: TUESDAY 09/04/2024

8.30 A.M. – 11.30 A.M.

INSTRUCTIONS

- Answer question one and any other two questions

SECTION A: Answer all the questions

Question 1 (30 marks)

- Structurally illustrate the formation of cyclic α -D-glucose and β -D-glucose from linear form of D-glucose. (6 marks)
- Explain three roles of water in a biological system. (6 marks)
- Using examples differentiate between essential and non-essential amino acids. (6 marks)
- Classify organisms according to their sources of energy (sunlight and chemical compounds) and source of carbon synthesis using examples. (6 marks)
- Differentiate between Monosaccharides and polysaccharides using examples. (6 marks)

SECTION B

Answer any two questions

Question one (20 marks)

- State three classification of lipids and give examples of each. (6 marks)
- Highlight four functions of lipids. (4 marks)
- Explain the five major steps of β -Oxidation of even-numbered saturated fatty acids. (10 marks)

Question two (20 marks)

- a) Using a flow diagram explain the TCA cycle indicating the enzyme involved. (10 marks)
- b) Differentiate between the glycolysis preparatory phase and the glycolysis payoff phase. (4 marks)
- c) Explain the three mechanisms of regulating the glycolysis pathway. (6 marks)

Question four (20 marks)

- a) Explain the electron transport chain. (8 marks)
 - b) State the five integral membrane proteins which are found in the inner mitochondrial membrane. (5 marks)
 - c) State three functions of Nucleotides. (3 marks)
 - d) Differentiate between DNA and RNA strand. (4 marks)
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