

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FOURTH YEAR EXAMINATION FOR THE AWARD OF BACHELOR DEGREE OF SCIENCE

BOTA 473: PLANT BIOCHEMISTRY

STREAMS: BSc. BIO, Bed. SCI

TIME: 2 HOURS

DAY/DATE : TUESDAY 28 /09/ 2021

8.30 AM – 10.30 AM

INSTRUCTIONS:

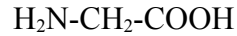
- Answer All Questions in Section A and any other Two in Section B
- Do not write on the question paper

1. a) Define a biochemical pathway and give an appropriate example. [2 Marks]
b) During photosynthesis two molecules of water are broken down
i. Where does this reaction occur? [1 Mark]
ii. Explain the fate of the products formed [1 Mark]
iii. Determine the number of reducing equivalents formed. [1 Mark]
2. a) Differentiate between the structures of amylose and amylopectin using molecular structures. [3 Marks]
b) Draw an appropriate scheme to illustrate the translation of mRNA in plants. [3 Marks]
3. a) Describe the synthesis of cellulose in plants. [4 Marks]
b) Explain the role of cellulose in human diet. [1 Mark]
4. a) Describe the factors that determine the physical and chemical properties of fatty acids. [4 Marks]

- b) Describe the structural arrangement of the lipids that make up the cell membrane of plants. [3 Marks]

Marks]

5. Below is the molecular structure of an amino acid



- i. Name the amino acid [1 Mark]
- ii. Using the amino acid [in 5(i)], illustrate how a peptide bond is formed. [3 Marks]

6. Describe any two coenzymes that are involved in energy metabolism processes in plants. [4 Marks]

SECTION B

7. a. Discuss the functions of proteins in plants. [10 Marks]
b. Describe the classification of plant lipids [10 Marks]
8. a. Discuss the functions of terpenes in plants. [10 Marks]
b. Describe the reactions that occur in the dark stage of photosynthesis. [10 Marks]
9. Describe nitrogen fixation in plants. [20 Marks]
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