



MACHAKOS UNIVERSITY

University Examinations 2022/2023 academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

THIRD YEAR SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (AGRICULTURAL EDUCATION AND EXTENSION)

BACHELOR OF SCIENCE (BIOLOGY)

SBT 310: PLANT BIOCHEMISTRY & PHYSIOLOGY

DATE:

TIME:

INSTRUCTIONS

1. Answer Question 1 (compulsory) and **any two** questions in Section B.
2. Use clean well labelled diagrams wherever appropriate.

SECTION A (COMPULSORY)

QUESTION ONE (30 MARKS)

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|----|--|-----------|
| a) | Draw and label the cross-section structure of chloroplast | (3 marks) |
| b) | Differentiate anabolic and catabolic pathways | (3 marks) |
| c) | Describe briefly three water soluble and three fat soluble vitamins | (3 marks) |
| d) | Explain three inhibitors of glycolysis | (3 marks) |
| e) | Briefly explain three major biomolecules studied in biochemistry | (3 marks) |
| f) | Outline three end-products of lipid metabolism | (3 marks) |
| g) | Describe briefly physiological processes that influence plant growth | (3 marks) |
| h) | Briefly explain photoperiodism in plants | (3 marks) |
| i) | Explain gluconeogenesis and vernalization in higher plants | (3 marks) |
| j) | Briefly describe pyrimidines and purines | (3 marks) |

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 MARKS)

Discuss assimilation of nitrogen by plants

QUESTION THREE (20 MARKS)

Discuss biosynthesis of phytohormones and their mode of action.

QUESTION FOUR (20 MARKS)

- a) Briefly discuss light dependent and light independent reactions in higher plants. (10 marks)
- b) Briefly discuss Krebs Cycle (10 marks)

QUESTION FIVE (20 MARKS)

With illustrations, describe the structures and functions of the listed monosaccharide derivatives.

- i). D-2-Deoxyribose
- ii). D-Ribose
- iii). D-Glucosamine
- iv). Sorbitol