

UNIVERSITY EXAMINATIONS

1ST SEMESTER 2022/2023 ACADEMIC YEAR

FOURTH YEAR EXAMINATION FOR THE DEGREES
OF BACHELOR OF SCIENCE (GEN), BACHELOR OF
EDUCATION (SCIENCE)

BOTA 416: PLANT PHYSIOLOGY II

STREAM: R

TIME: 2 HRS

DAY: MONDAY [8.30AM – 10.30AM]

DATE: 05/12/2022

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.

INSTRUCTIONS: - Answer **ALL** questions in section A and any **TWO** questions in section B

SECTION A (40 marks)

QUESTION ONE

Define the following: - (5 Marks)

- (a) Action spectra
- (b) Energy conversion efficiency
- (c) Photochemical reaction center
- (d) Quantum yield
- (e) Quantum efficiency

QUESTION TWO

Describe Emerson's experiments. (5 marks)

QUESTION THREE

Describe the structure of thylakoid membrane D1 protein. (5 marks)

QUESTION FOUR

Explain how herbicides block electron flow. (5 marks)

QUESTION FIVE

Outline five pathways used by organisms for autotrophic growth. (5 marks)

QUESTION SIX

Describe the works of Jagendorf et al. (5 marks)

QUESTION SEVEN

Explain how algae and cyanobacteria concentrate CO₂ at the site of carboxylation. (5 marks)

QUESTION EIGHT

Describe the formation of C₄ acids CAM plants. (5 marks)

SECTION B (30 marks)

QUESTION NINE

Explain how plants protect the photosynthetic machinery. (15 marks)

QUESTION TEN

Describe the structure and function of the major protein complexes in the thylakoid membrane. (15 marks)

QUESTION ELEVEN

Describe the role of carotenoids in the protection of photosynthetic machinery. (15 marks)

