



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

THIRD YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SBT 310: PLANT PHYSIOLOGY AND BIOCHEMISTRY

DATE: 24/4/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS

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

SECTION A

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Differentiate between the following terms:-
 - i. amylose and amylopectin (2 marks)
 - ii. Tropic and nastic movements (2 marks)
- b) Illustrate the formation of a triglyceride (3 marks)
- c) Describe the biosynthetic pathways of amino acids (3 marks)
- d) Explain the dietary importance of vitamins (3 marks)
- e) Explain the functions of NADH and FADH in metabolic reactions (3 marks)
- f) Describe the Phytochrome system and its role in plants (3 marks)
- g) Explain the term vernalization and its importance in plants (3 marks)
- h) Outline the enzymes that bind CO₂ in C₃ and in CAM plants (2 marks)
- i) Classify plants based on their photoperiodism (3 marks)
- j) Outline the physiological effects of gibberellic acid in plants (3 marks)

SECTION B

QUESTIONS TWO (20 MARKS)

- a) Differentiate between non-cyclic and cyclic electron flow (5 marks)
- b) Discuss carbon assimilation pathway in C₄ Plants (15 marks)

QUESTION THREE (20 MARKS)

Describe the β - oxidation of fatty acids

QUESTION FOUR (20 MARKS)

Discuss nitrogen metabolism

QUESTION FIVE (20 MARKS)

Discuss protein synthesis