



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SBT 310: PLANT PHYSIOLOGY AND BIOCHEMISTRY

DATE: 25/7/2019

TIME: 11.00-1.00 PM

INSTRUCTIONS:

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

SECTION A

QUESTION 1. – 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

QUESTION TWO

(a). Differentiate between non-cyclic and cyclic electron flow (5 marks)

(b). Discuss carbon assimilation pathway in C₄ Plants (15 marks)

QUESTION THREE

Describe the β - oxidation of fatty acids (20 marks)

QUESTION FOUR

Discuss nitrogen metabolism (20 marks)

QUESTION FIVE

Discuss protein synthesis (20marks)