



# MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SBT103: PLANT PHYSIOLOGY

DATE: 25/7/2019

TIME: 2.00-4.00 PM

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## 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) Describe using an illustration the formation of a triglyceride (3 marks)
- c) Describe the properties 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 role of the following enzymes in starch metabolism
  - i. UDPG transglucosylase (1.5 marks)
  - ii. R enzyme (1.5 marks)
- g) Explain the differences between non-cyclic and cyclic electron flow Systems (3 marks)
- h) Name the enzymes that bind CO<sub>2</sub> in C<sub>3</sub> and CAM plants (2 marks)
- i) Outline the various groups of plants based on their photoperiodism (3 marks)
- j) Outline the physiological effects of gibberellic acid in plant (3 marks)

## **SECTION B**

### **QUESTION TWO**

Discuss carbon fixation pathway in C<sub>4</sub> Plants (20 marks)

### **QUESTION THREE**

Describe the  $\beta$ - oxidation of fatty acids (20 marks)

### **QUESTION FOUR**

Discuss the nitrogen metabolism (20 marks)

### **QUESTION FIVE**

Discuss protein synthesis (20marks)