



# **MAASAI MARA UNIVERSITY**

## **REGULAR UNIVERSITY EXAMINATIONS 2018/2019 ACADEMIC YEAR THIRD YEAR SECOND SEMESTER FOR THE DEGREE OF BACHELOR OF SCIENCE AND BACHELOR OF EDUCATION (SCIENCE)**

**COURSE CODE: BOT 3209  
COURSE TITLE: PLANT PHYSIOLOGY**

**DATE: 25<sup>TH</sup> APRIL, 2019  
1300HRS**

**TIME: 1100 -**

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**Instructions**

**Answer ALL questions in section A and any other TWO questions in section B. Illustrate your answers with diagrams and give examples where appropriate.**

**SECTION A(30 MARKS): Answer ALL questions in section A**

- 1.Explain the phenomenon of photorespiration. (3 marks)
- 2.Explain the relevance of the high specific heat capacity of water for plant physiology. (3 marks)
3. Explain the basic steps in the Krebs cycle and how it is linked to Electron Transport Chain. (3 marks)
- 4.Explain how absorption of sunlight causes excitation of chlorophyll pigments. (3 marks)
- 5.Citing examples, describe briefly how symbiotic microorganisms fix nitrogen in plants. (3 marks)
- 6.Explain the roles of Rubisco, RuBP and NADPH in the Calvin cycle. (3 marks)
- 7.Describe the CAM pathway and how it differs from the C4 pathway.(3 marks)
- 8.Describe the relationship among the chloroplast, stroma, grana, and thylakoids. (3 marks)
- 9.Explain the difference between apoplastic and symplastic water movement in plants. (3 marks)
10. Explain the relationship between the light reactions and the carbon reactions. (3 marks)

**SECTION B (40 MARKS): Answer any TWO questions**

11. Give a detailed account of the commercial applications of phytohormones.

**(20 marks)**

12. Discuss the nitrogen fixation process and its role in agriculture

**(20**

**marks)**

13. Describe the process of water absorption in plants.

**(20**

**marks)**

14. Write an essay on the principles and objectives of plant physiology.

**(20**

**marks)**

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