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MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS**

**2016/2017ACADEMIC YEAR**

**THIRD YEAR SECOND SEMESTER EXAMINATIONS**

**FOR BACHELOR OF SCIENCE AND**

**BACHELOR OF EDUCATION (SCIENCE)**

**SCHOOL OF SCIENCE AND INFORMATION SCIENCES**

**COURSE CODE: BOT 313**

**COURSE TITLE: PLANT PHYSIOLOGY I**

**DATE: TIME:**

**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:** ANSWER **ALL** QUESTIONS **(30 MARKS)**

1. Explain why carbohydrates are the most abundant organic compounds in plants **(3 marks)**
2. State SIX roles of water in plant physiology. **(3 marks)**
3. Using examples, name two types of disaccharides **(3marks)**
4. State the difference between chlorophyll **a** and **b**. **(3marks)**
5. Describe the processes by which atmospheric nitrogen gets fixed in the plant roots. **(3 marks)**
6. State the conditions in which the C3 plants can thrive. **(3 marks)**
7. Outline the variants of C4 pathways. **(3 marks)**
8. Explain how RuBisCO achieves the mechanism of substrate specificity. **(3 marks)**
9. Describe types of polysaccharides with the appropriate examples.
10. **marks)**
11. Explain how transpiration pull is related to passive absorption of water by the plant roots **(3 marks)**

**SECTION B:** ANSWER ANY **TWO** QUESTIONS **(40 MARKS)**

1. Discuss the photosynthetic pigments in plants **(20 marks)**
   1. Describe conditions that increase photorespiration . **(8 marks)**
   2. State three model organisms where the mechanisms of biophysical carbon concentration mechanisms (CCM) is evident. **(12 marks)**
2. Describe the functions of lipids in plants. **(20 marks)**
3. Outline the significance of hydroponics in plant physiology. **(6 marks)**
4. Describe the mechanisms of water uptake in plants. **(14 marks)**