CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE EDUCATION, BACHELOR OF SCIENCE IN AGRICULTURE, BACHELOR OF SCIENCE IN NATURAL RESOURCES MANAGEMENT

BOTA 271: PLANT PHYSIOLOGY I

STREAMS: BSC (AGED, AGRIC, NARE) **TIME: 2 HOURS**

DAY/DATE: TUESDAY 10/12/2019 **11.30 AM – 1.30 PM**

INSTRUCTIONS:

Answer ALL Questions in Section A and any Two in Section B

SECTION A (30 MARKS)

1. Define the following terms and give appropriate examples of each. [4 marks]

   (a) Solutions
   (b) Colloids
   (c) Suspension
   (d) Polar solutions

2. (a) List five roles of water in plant physiology [2 ½ marks]

   (b) State the properties of water that enable each of the roles stated above. [2 ½ marks]

3. List three types of solutions that occur in cells and give an example of each of these solutions. [3 marks]

4. State three roles of cellulose in plants. [3 marks]

5. (a) Describe the forms of starch that are found in plant cells. [5 marks]

   (b) Describe the chemical structure of any one form of starch. [2 marks]

6. Describe the following concepts with relation to transport in plants. [4 marks]

   (a) Bulk flow
   (b) Water potential

7. Explain why the following hormones are necessary for plant growth and development. [6 marks]

   (a) Abscisic acid
   (b) Gibberellic acid
   (c) Indole acetic acid

SECTION B

8. (a) Describe the structural organization of proteins in plants. [10 marks]

   (b) Describe the pathways through which water flow in plant after absorption. [10 marks]

9. (a) Describe the transportation of materials through the phloem in plants. [10 marks]

   (b) Discuss the major roles of the following mineral nutrients in plants. [10 marks]

   (a) Nitrogen
   (b) Iron
   (c) Manganese
   (d) Calcium
   (e) Molybdenum

10. Discuss the process of photosynthesis in plants. [20 marks]
