

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF  
BACHELOR OF SCIENCE AGRICULTURAL EDUCATION AND EXTENSION,  
BACHELOR OF SCIENCE ANIMAL SCIENCE, BACHELOR OF SCIENCE  
AGRICULTURE, BACHELOR OF SCIENCE NATURAL RESOURCES  
MANAGEMENT, BACHELOR OF SCIENCE WILDLIFE AND ENTERPRISE  
MANAGEMENT.**

**BOTA 271: PLANT PHYSIOLOGY I**

**STREAMS: BSC (AGED), BSC (NARE), BSC (WIEM), BSC (HORT), BSC (AGRIC)  
YISI**

**TIME: 2 HOURS**

**DAY/DATE: WEDNESDAY 10/12/2014**

**2.30 PM – 4.30 PM**

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**INSTRUCTIONS:**

**Answer All Questions in Section A and two Questions in Section B**

**Section A (30 Marks)**

1. (a) Use an illustration to show the process of solvation of sodium chloride in water. [2 marks]
- (b) Give three examples of non-ionic polar compounds which occur in living systems. [3 marks]
- (c) Define the term colloid. [1 mark]
2. (a) Distinguish between the structure of aldose and ketose carbohydrates. [4 marks]
- (b) State four properties of monosaccharides. [2 marks]
3. (a) Describe briefly the reaction of proteins with heavy metals. [2 marks]
- (b) Explain the role of co-factors in enzyme controlled reactions. [2 marks]
- (c) Explain the property of geometric specificity in enzyme activities. [2 marks]

4. (a) State any three roles of osmosis in plants. [3 marks]
- (b) Define the following terms
- (i) Osmotic pressure
  - (ii) Wall pressure
  - (iii) Diffusion gradient. [3 marks]
5. (a) Name three mineral ions useful to the life of a plant and state the form in which they are absorbed. [3 marks]
- (b) Distinguish between symplastic and apoplastic movement of water in plant tissues. [3 marks]

**Section B (40 Marks)**

6. Describe the factors that affect enzyme controlled reactions. [20 marks]
7. Discuss the occurrences of the light independent reaction of photosynthesis. [20 marks]
8. Describe the process of absorption and uptake of water in plants. [20 marks]
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