

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF  
BACHELOR OF SCIENCE IN BIOLOGY, BACHELOR OF EDUCATION SCIENCE**

**BOTA 271: PLANT PHYSIOLOGY**

**STREAMS: BSC, BED (SCI)**

**TIME: 2 HOURS**

**DAY/DATE: TUESDAY 21/04/2020**

**8.30 AM – 10.30 AM**

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**INSTRUCTIONS:**

**ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO IN SECTION B**

1. Describe the following concepts as used in relation to water.
  - (i) Bound water [2 marks]
  - (ii) Latent heat of vaporization [2 marks]
  - (iii) Thermal conductivity [2 marks]
  
2. Differentiate between the xylem and phloem. [3 marks]
  
3. (a) Describe the importance of cohesion and adhesion properties of water in plant physiology. [3 marks]
  
- (b) List three colloidal components that occur in plant cells. [3 marks]
  
4. (a) Describe the structures of the following carbohydrates.
  - (i) Sucrose [3 marks]
  - (ii) Cellulose [3 marks]
  
- (b) Differentiate between a ketose and an aldose. [2 marks]
  
- (c) List the functions of lipids in plants. [3 marks]
  
5. Describe the roles of amino acids in plants. [4 marks]

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

6. (a) Discuss phloem transport in plants. [10 marks]
- (b) Discuss the factors that affect enzyme activity in plants. [10 marks]
7. Discuss the roles of the following hormones in plants.
- (i) Auxins [5 marks]
- (ii) Cytokinins [5 marks]
- (iii) Ethylene [5 marks]
- (iv) Abscicic acid [5 marks]
8. Discuss the process of respiration in plants. [20 marks]
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