

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS
EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN
BIOLOGY

BOTA 271: PLANT PHYSIOLOGY I

STREAMS: BOTA

TIME:2 HOURS

DAY/DATE: TUESDAY 17/12/2024

11.30 A.M. –1.30 P.M

Instructions: Answer all questions in section A and any two in section B

Section A

1. a. Explain how the following properties of water affect plant physiology
 - i. Thermal conductivity (2 marks)
 - ii. Polarity (2 marks)
 - iii. Latent heat of vaporization (2 marks)
2. b. Describe two types of solutions that occur in cells (2 marks)
c) Explain how nutrient deficiency affect plant growth and development (2 marks)
3. a) Describe the role of xylem and phloem in plants. (2 marks)
b) Explain how the structure of root hairs facilitates their function in water absorption. (2 marks)
4. a) Describe the classification of fatty acids in plants. (5 marks)
 - a) Describe the functions of amino acids in plants (1 marks)
 - b) Describe four levels of structural organization of proteins (4 marks)
 - a) Describe the process of transpiration and its importance to plants. (2 marks)
 - b) Describe the functions of any two disaccharides in plants (2 marks)
 - c) Explain structural adaptations of leaf for photosynthesis (2 marks)

Section B

5. Discuss the process of photosynthesis in plants under the following
 - a) Light-dependent reactions (10 marks)
 - b) Light-independent reactions. (10 marks)
 - c) Analyze the role of plant hormones in regulating growth and development. (20 marks)
 6. Examine the role of water in plant physiology, focusing on its movement through the plant and its importance for various physiological processes. (20 marks)
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