CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE (NATURAL RESOURCE MANAGEMENT), BACHELOR OF SCIENCE (WILDLIFE MANAGEMNT), BACHELOR OF SCIENCE (AGRICULTURAL EDUCATION), BACHELOR OF SCIENCE (AGRICULTURE), BACHELOR OF SCIENCE (HORTICULTURE)

BOTA 271/202: PLANT PHYSIOLOGY I

STREAMS: BSC (NARE, AGED, WIEM, AGRIC & HORT)TIME: 2 HOURS

DAY/DATE: TUESDAY05/12/2017 11.30 A.M. – 1.30 P.M.

INSTRUCTIONS: Answer ALL the questions in section A and TWO questions in section B

SECTION A (30 MARKS) – ANSWER ALL THE QUESTIONS

1. Explain the difference between aldose and ketose carbohydrates, and give specific examples for each. [3 marks]
2. Explain how temperature and particle size affects the rat of dissolution of a compound. [3 marks]
3. Distinguish between hydrophilic and hydrophobic substances. [3 marks]
4. Explain how neutral salts influence reactivity of proteins in plants metabolism. [3 marks]
5. Distinguish between symplastic and apoplastic movement of soil solution within a plant. [3 marks]
6. Explain three factors which affect the rate of diffusion. [3 marks]
7. Outline the uptake of soil solution within the plant xylem by root pressure. [3 marks]
8. State the roles of the following minerals ions n plants and state the form in which they are absorbed.
   (i) Phosphates [1 mark]
   (ii) Sulphates [1 mark]
   (iii) Nitrates [1 mark]

9. (a) Define photolysis [1 mark]

   (b) Distinguish between phosystem I and photosystem II in relation to photosynthesis. [1 mark]

   (c) Name the primary CO_2 acceptor in C_4 carboxylation. [1 mark]

10. Use a diagram to show the Kranz anatomy in the leaves of C_4 photosynthetic plants. [3 marks]

SECTION B (40 MARKS) – ANSWER ANY TWO QUESTIONS

11. Discuss the chemical structure and functions of the polysaccharides starch, glycogen, cellulose and chitin. [20 marks]

12. Describe the glycolytic pathway of glucose metabolism. [20 marks]

13. Discuss the factors that influence enzyme controlled activities. [20 marks]
