MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF AGRICULTURAL SCIENCES

DEPARTMENT OF AGRICULTURAL EDUCATION AND EXTENSION

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN AGRICULTURAL EDUCATION AND EXTENSION

SBT 102: PLANT PHYSIOLOGY

DATE: 25/7/2019 **TIME:2.00-4.00 PM**

INSTRUCTIONS;

Answer *ALL* questions from Section A and any other *TWO* from Section B:

SECTION A: COMPULSORY: (30 MARKS)

QUESTION ONE

a) Define plant physiology (2 marks)

b) State general properties of colloids (3 marks)

c) Describe the classifications of the following:

i. Lipids (3 marks)

ii. Amino acids (3 marks)

iii. Carbohydrates (3 marks)

d) Describe the differences between diffusion and osmosis (4 marks)

e) Explain the following soil water constants:-

i. Field capacity (1 mark)

ii. Saturation capacity (1 mark)

iii. Permanent wilting point (1 mark)

f) Describe the two pathways of movement of water in plants (6 marks)

g) State soil characteristics that influence mineral and water absorption and uptake by plants (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS (40 MARKS)

QUESTION TWO (20 MARKS)

a) Describe the general properties of aqueous solutions (10 marks)

b) Discuss Calvin's cycle (light independent reaction of photosynthesis) (10 marks)

QUESTION THREE (20 MARKS)

a) Discuss the factors that affect plant growth and development (10 marks)

b) Discuss the mechanisms of phloem transport in plants (10 marks)

QUESTION FOUR (20 MARKS)

a) Discuss the structure and classification of proteins (12 marks)

b) Describe the biological functions of proteins (8 marks)

QUESTION FIVE (20 MARKS)

a) Discuss production of pyruvic acid production by glycolysis (Pyruvic cycle), a process of respiration in plants (10 marks)

b) Describe the Krebs cycle (Citric acid cycle) (10 marks)