



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)