



MACHAKOS UNIVERSITY

University Examinations 2020/2021 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN (BIOLOGY)

BACHELOR OF EDUCATION (SCIENCE)

SBT 201: PLANT FUNCTION

DATE: 22/3/2021

TIME: 2.00-4.00 PM

INSTRUCTIONS

1. Answer Question one (compulsory) and **any two** questions in Section B.
2. Use clean well labelled diagrams wherever appropriate.

SECTION A

QUESTION ONE (30 MARKS) (COMPULSORY)

- a) Briefly explain the role of plant function in addressing food security challenges in the world. (3 marks)
- b) Distinguish between Lyophilic and Lyophobic systems as applied in plant function (3 marks)
- c) Briefly, describe the mechanism of opening and closing of stomata. (3 marks)
- d) Explain the concept of 'Ion-Carrier Complex'. (3 marks)
- e) What role does the casparian strip play in entry of water into plants? (3 marks)
- f) Differentiate between active and passive absorption of water by plants. (3 marks)
- g) Briefly, describe how cell growth and differentiation takes place in apical meristems. (3 marks)
- h) Explain the process of senescence and programmed cell death in plant growth and development. (3 marks)

- i) Briefly, describe the structural and functional differences between amino acids and Phospholipids (3 marks)
- j) State three physical properties of colloidal systems (3 marks)

SECTION B

QUESTION TWO (20 MARKS)

Discuss the process of sucrose transport in plants

QUESTION THREE (20 MARKS)

Discuss the process of Krebs cycle in cellular oxidative metabolism.

QUESTION FOUR (20 MARKS)

Discuss the photosynthetic pathways of the following groups of plants:

- a) C3 plants. (10 marks)
- b) C4 plants. (5 marks)
- c) CAM plants. (5 marks)

QUESTION FIVE (20 MARKS)

Discuss the physiological functions of different types of plant growth hormones.