



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

DECEMBER SESSION EXAMINATION FOR

BACHELOR OF EDUCATION

SBT 405: MORPHOGENESIS AND PLANT ANATOMY

DATE: 23/4/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS

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

Answer ALL questions in this section (30 marks)

QUESTION ONE (30 MARKS)

- a) Define the following terms:
 - i. Totipotency. (3 marks)
 - ii. Morphogenesis.
 - iii. Aerenchyma
- b) Explain the process of water movement through a dicot root. (3 marks)
- c) Illustrate three types of secondary thickening in tracheid. (3 marks)
- d) Explain three applications of tissue culture. (3 marks)
- e) Outline three anatomical adaptations of hydrophytes. (3 marks)
- f) Describe the development of microsporangium. (3 marks)
- g) Describe the function of vacuoles in plant cells. (3 marks)
- h) List three types of flowers based on the position of whorls in reference to the ovary. (3 marks)

- i) Describe types of tissue for mechanical support in leaves. (3 marks)
- j) Distinguish between a dicot and monocot leaf (3 marks)

SECTION B: Answer any TWO questions in this section (40 marks)

QUESTION TWO (20 MARKS)

Explain the classification of meristematic tissues.

QUESTION TWO (20 MARKS)

Describe the mechanisms of fertilization in angiosperms.

QUESTION TWO (20 MARKS)

Discuss anomalous secondary growth in plants.

QUESTION TWO (20 MARKS)

Discuss secondary growth in a dicot stem and root.