



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (AGRICULTURAL EDUCATION AND EXTENSION)

BACHELOR OF EDUCATION (SCIENCE)

BACHELOR OF SCIENCE (BIOLOGY)

SBT 102: PLANT MORPHOLOGY AND ANATOMY

DATE: 6/5/2019

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.

SECTION A: ANSWER ALL QUESTIONS (30 MARKS)

QUESTION ONE (30 MARKS)

- a) Explain the following terms as used in plant morphology and anatomy: (1 mark each)
 - i. Totipotency
 - ii. Morphogenesis
 - iii. Inflorescence
- b) Outline three functions of parenchyma cells (3 marks)
- c) Describe three types of Phyllotaxy (3 marks)
- d) Explain the adaptations of seeds to entomophilous modes of seed dispersal (3 marks)
- e) Describe the structure of phloem tissue of angiosperms (3 marks)
- f) Explain three modifications of the root to its function (3 marks)
- g) Describe the process of sexual reproduction in Bryophytes (3 marks)

- h) Illustrate three types of vascular bundles. (3 marks)
- i) Outline the differences between the anatomy of a dicot and monocot leaf (3 marks)

SECTION B: ANSWER ANY TWO (2) QUESTIONS (TOTAL 40 MARKS)

QUESTION TWO (20 MARKS)

- a) Discuss the theories explaining shoot and root apical organization (10 marks)
- b) Discuss the various types of fruits (10 marks)

QUESTION THREE (20 MARKS)

Describe the male and female reproductive morphology and anatomy of a flower.

QUESTION FOUR (20 MARKS)

Discuss the internal structure of a young stem of a dicot and a monocot

QUESTION FIVE (20 MARKS)

- a) Discuss how the aquatic plants are adapted to perform their functions (10 marks)
- b) Describe five applications of plant cell and tissue culture (10 marks)