MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FIRST YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF AGRICULTURAL EDUCATION AND EXTENSION

BACHELOR OF EDUCATION (SPECIAL NEEDS)

BACHELOR OF SCIENCE (BIOLOGY)

SBT 102: PLANT MORPHOLOGY AND ANATOMY

DATE: 11/12/2020 **TIME: 2:00 – 4:00 PM**

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 (COMPULSORY) (30 MARKS)

a) Define the following terms as used in plant morphology and anatomy: (3 marks)
   i. Totipotency
   ii. Double fertilization
   iii. Alternation of generation

b) Outline three functions of parenchyma cells (3 marks)

c) Describe the arrangement of leaves on the stem (4 marks)

d) Describe three types of vascular bundles. Illustrate (3 marks)

e) Describe the structure of phloem tissue of an angiosperm (3 marks)

f) Explain three modifications of the root to its function (3 marks)

g) Describe the process of sexual reproduction in Bryophytes (4 marks)

h) Explain three types of vascular bundles. Use diagrams (3 marks)

i) Outline the differences between a dicot and monocot seed (4 marks)

SECTION B: ANSWER ANY TWO (2) QUESTIONS (TOTAL 4OMARKS)

QUESTION TWO (20 MARKS)

a) Discuss the theories explaining shoot and root apical organization (10 marks)

b) Discuss the adaptations of Anemophilus modes of seed dispersal (10 marks)

QUESTION THREE (20 MARKS)

a) Describe the reproductive morphology of a flowering plant (10 marks)

b) Discuss five modifications of roots (10 marks)

QUESTION FOUR (20 MARKS)

a) Describe the internal structure of a young stem of a young dicot stem (5 marks)

b) Describe three types of tissues of secondary origin that helps in support (15 marks)

QUESTION FIVE (20 MARKS)

a) Discuss how Halophytes are adapted to perform their functions (10 marks)

b) Describe five applications of plant cell and tissue culture (10 marks)