



MACHAKOS UNIVERSITY

University Examinations 2019/2020 academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FIRST YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF EDUCATION (SCIENCE)

SBT 102: PLANT MORPHOLOGY AND ANATOMY

DATE: 22/1/2021

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) 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 (3 marks)
- d) Describe the structure of xylem tissue of an angiosperm (3 marks)
- e) Explain three modifications of the root to various functions (3 marks)
- f) Describe the process of sexual reproduction in Pteridophytes (3 marks)
- g) Outline the differences between the anatomy of dicot and monocot leaf (3 marks)
- h) Identify three adaptations of seed to Entomophilus of modes of seed dispersal (3 marks)
- i) Highlight three adaptations of hydrophytes to their habitat (3 marks)
- j) Illustrate three types of Cohesion of the stamen

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

QUESTION TWO (20 MARKS)

Discuss the theories explaining shoot and root apical organization

QUESTION THREE (20 MARKS)

Describe the reproductive morphology of a flowering plant

QUESTION FOUR (20 MARKS)

Discuss the internal structure of a young stem of a young dicotyledonous and monocotyledonous stem

QUESTION FIVE (20 MARKS)

Discuss five application of plant cell and tissue culture