



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)

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|------|-------------------------------------------------------------------------------|-----------|
| 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 Cohension 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