



MACHAKOS UNIVERSITY

University Examinations 2019/2020 academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF EDUCATION (SCIENCE)

SBT 405: PLANT MORPHOGENESIS AND DEVELOPMENTAL ANATOMY

DATE: 20/1/2021

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

QUESTION ONE (30 MARKS)

- a) Differentiate between Cell growth and Cell differentiation (3 marks)
- b) Explain three successive stages of embryogenesis (3 marks)
- c) Differentiate between Periclinal and Anticlinal cell divisions (3 marks)
- d) Describe three functions of Auxin in Plant morphogenesis (3 marks)
- e) Describe briefly the developmental process of lateral meristems (3 marks)
- f) Outline three main functions of pluripotent stem cells found in shoot apical meristem (SAM). (3 marks)
- g) Briefly describe the role of quiescent center in the initiation of Root Apical Meristem (3 marks)
- h) Explain patterning of the gynoecium in higher plants (3 marks)
- i) Explain:
 - i. Endosporic gametophyte (1 mark)
 - ii. Formation of Endosporic gametophyte within the sporangium? (2 marks)
- j) Explain the concept of totipotency as a basis of Plant tissue culture technology (3 marks)

SECTION B

QUESTION TWO (20 MARKS)

Discuss the process of initiation and development of the leaf.

QUESTION THREE (20 MARKS)

Discuss inflorescence in plants.

QUESTION FOUR (20 MARKS)

Discuss the process of Reconstitution and restoration in plant tissues.

QUESTION FIVE (20 MARKS)

Discuss the development of the fertilized ovule into mature seed in angiosperms