



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF EDUCATION (SCIENCE)

SBT 405: MORPHOGENESIS AND DEVELOPMENTAL ANATOMY

DATE: 19/10/2020

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: COMPULSORY

QUESTION ONE (30 MARKS)

- a) Explain the meaning of the following terms with respect to morphogenesis and development (3 marks)
 - i) Totipotency
 - ii) Determination
 - iii) Dedifferentiation
- b) Highlight any three differences between plant and animal body development (3 marks)
- c) Describe double fertilization in angiosperms (3 marks)
- d) Highlight the various morphogenetic changes which occur in an embryo during dermatogen stage (3 marks)
- e) Outline three types of endosperms (3 marks)
- f) State the roles of preprophase band in cell plate formation (3 marks)
- g) Explain any three patterns of phyllotaxy observed in plants. (3 marks)
- h) Illustrate the structure of Root Apical Meristem (RAM) (3 marks)
- i) Highlight any three changes which occur on Shoot Apical Meristems during floral development
- j) Describe three classes of genes which control flowering

SECTION B: ANSWER ANY TWO QUESTIONS (40 MARKS)

QUESTION TWO (20 MARKS)

Discuss sporogenesis in plants

QUESTION THREE (20 MARKS)

Discuss secondary growth of shoots

QUESTION FOUR (20 MARKS)

Discuss leaf formation

QUESTION FIVE(20 MARKS)

Discuss somatic embryogenesis