JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

UNIVERSITY EXAMINATION 2013/2014

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION (SCIENCE)

COURSE CODE: SBT 402

TITLE: MORPHOGENESIS AND ANATOMY

DATE: **TIME:** **DURATION**: 2 HOURS

INSTRUCTIONS

1. **This paper contains FIVE (5) questions**
2. **Answer ALL questions in section A and ANY other 2 Questions from section B**
3. **Write all answers in the booklet provided**

SECTION A: (30 MARKS)

1. Describe how the physiological correlations listed below manifest themselves in plant morphogenesis.
    a. Nutritional correlations (1 mark)
    b. Compensatory correlations (1 mark)
    c. Stimulatory correlations (1 mark)
2. Describe Vochting's experiment on polarity in plants. (3 marks)
3. Distinguish between the tunica-corpus and the histogen theories of apical structures in plants. (3 marks)
4. Explain the following terminologies:
    a. Mass meristems (1 mark)
    b. Rib meristems (1 mark)
    c. Plate meristems (1 mark)
5. Describe the plastochronic changes that occur during leaf morphogenesis.
6. Distinguish between the open and closed apical organisation in roots. (3 marks)
7. Explain the different types of symmetry observed in plants (3 marks)
8. Illustrate a mature angiosperm megagametophyte. (3 marks)
9. Explain how reconstitution is achieved in plants. (3 marks)
10. Describe the meristematic cells found in the vascular cambium. (3 marks)

SECTION B: (40 MARKS)

11. Give a comparative account of embryogenesis in monocotyledonous and dicotyledonous plants. (20 marks)
12. Explain the genetic control on morphogenesis in the apical domain of *Arabidopsis thaliana* embryo. (20 marks)
13. Discuss the different types of abnormal growth in plants. (20 marks)
14. Discuss the role of light, water and temperature as morphogenetic factors.

(20 marks)