JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION (SCIENCE)

4TH YEAR 1ST SEMESTER 2013/2014 ACADEMIC YEAR

REGULAR

COURSE CODE: SBT 402

COURSE TITLE: MORPHOGENESIS & ANATOMY

EXAM VENUE:LAB 4 **STREAM: (BSc. Science)**

DATE: 14/8/14 **EXAM SESSION: 9.00 – 11.00AM**

TIME: 2 HOURS

Instructions:

1. **Answer question 1 (compulsory) in Section A and any other 2 questions in Section B .**
2. **Candidates are advised not to write on the question paper.**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A (30 marks)

1) Outline three different ways in which meristems can be classified. (3 marks)
2) Explain the three aspects of polarity in plants. (3 marks)
3) Describe the three phases of leaf morphogenesis in plants. (3 marks)
4) Distinguish between inhibitory and stimulatory correlations. (3 marks)
5) Describe the differences in the origin of branches between seedless and seed plants. (3 marks)
6) Use a simple sketch to depict the cytohistological zonation of the apical meristem. (3 marks)
7)
    a) Describe the initials found in the vascular cambium. (1 marks)
    b) Explain the cellular divisions that give rise to the secondary vascular tissues. (2 marks)
8) Illustrate a root tip clearly indicating the apical meristem and its derivative primary meristematic tissues. (3 marks)
9) Explain the unique anatomical features observed in monocotyledonous leaves. (3 marks)
10) Describe the effects of light intensity on morphogenesis. (3 marks)

SECTION B (40 marks).

11)
    a) Discuss the anatomical features of the microsporongiate, megasporangium and a mature ovule in gymnosperms. (10 marks)
    b) Outline the developmental stages of a dicotyledonous embryo. (10 marks)
12) Give an account of regeneration as a phenomenon in plants. (20 marks)
13) Discuss the different types of abnormal growth in plants. (20 marks)
14) Using the radial pattern formation in *Arabidopsis thaliana* as an example, explain the molecular control of morphogenesis. (20 marks)