



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (CROP IMPROVEMENT AND PROTECTION) AND BACHELOR OF EDUCATION (SCIENCE)

KST 111: PLANT GROWTH AND DEVELOPMENT

DATE: Monday 2nd April, 2012

TIME: 11.00 a.m. – 1.00 p.m.

INSTRUCTIONS

Answer ALL questions in Section A and any TWO in section B.

SECTION A – (40 MARKS)

1. (a) Differentiate between morphogenesis and differentiation. [2 marks]
(b) Give one striking example of morphogenesis and state two important factors that affect this process. [3 marks]
2. “In the process of determining plant growth, dry weight is the measurement of choice” Justify the statement: [5 marks]
3. (a) Name two plants whose seeds require light exposure to induce germination. [2 marks]
(b) Explain how “gamma plantlets” are generated and state their significance. [3 marks]
4. “If cells were irradiated at doses enough to stop DNA synthesis, mitosis and cell divisions, germination will always stop” Using relevant examples, critically evaluate this statement. [5 marks]
5. Give account of the kinetics of plant growth. [5 marks]
6. (a) Distinguish between distal and proximal root placements. [2 marks]
(b) Explain the significance of quiescent center and mucilage in roots. [3 marks]
7. Explain how both the leaf shape and length are determined in a specified plant. [5 marks]

8. (a) Define the term phyllotaxy. [2 marks]
(b) Citing relevant examples, describe three types of phyllotaxes. [3 marks]

SECTION B – (30 MARKS)

9. (a) With help of a clear diagram, describe two types of root cell divisions and explain role of phosphorus nutrition on the two types of divisions. [8 marks]
(b) Discuss determinate and indeterminate growth and structures and their significance on growth and sustainable vegetable production in the tropics. [7 marks]
10. Discuss relations between vegetative and reproductive growth stages, emphasizing the role of internal and external growth factors. [15 marks]
11. Discuss senescence in plant growth and development, pointing out the role of external and internal factors. Explain the significance of the process to the plant and the grower. [15 marks]
12. (a) Discuss leaf mosaic and its role in agro-forestry. [7 marks]
(b) Citing relevant examples, discuss both positive and negative solar tracking. [8 marks]

.....