

JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

UNIVERSITY EXAMINATION FOR DEGREE OF BACHELOR OF SCIENCE IN HORTICULTURE

SECOND YEAR SECOND SEMESTER 2013/2014 ACADEMIC YEAR

REGULAR

COURSE CODE: AHT 3221

COURSE TITLE: Plant Physiology

EXAM VENUE:LR 3 STREAM: BSc (Horticulture)

DATE: 8/12/14 EXAM SESSION: 9.00 – 11.00 AM

TIME: 2.00 HOURS

Instructions:

- 1. Answer ALL question in Section A (compulsory) and ANY TWO 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. a) Define the following terminologies
 - (i)Water potential[1 mark](ii)Vernalization[1 mark]
 - (iii) Programmed cell death [1 mark]
 - (iv) Phototrophism [1 mark]
 - b) Describe briefly the relationship between senescence and abscission. [2marks] c) Outline the differences between primary and secondary growth in plants. [4marks]
- 2. a) What do you understand by the concept of phenotypic plasticity in relation to plant stress physiology? [2 marks]
 - b) Statethree (3) general ways plants utilize to respond to both biotic and abiotic stress.

[3 marks]

- d) Enumerate five (5) different developmental and physiological mechanisms plant utilize against environmental stress. [5 marks]
- 3. a)Discuss the key role of abscisic acid (ABA) during drought stress. [3 marks]
 - b) How would you expect a plant to optimize its carbon assimilation if it's under the shade and in full sun? [3 marks]
 - c) Discuss the role of photoperiodism in plant growth and development. [4 marks]

SECTION B [40 MARKS]

- 4. a) Discuss briefly transpiration, mechanisms of stomataltranspiration and the different types of stomatal movements. [15 marks]
 - b)Transpiration is a necessary evil in plants. Explain.

[5 marks]

- 5. Discuss in detail events that take place during lightdependent and light independent steps in photosynthesis. [20 marks]
- 6. a) Using ethylene and indole-3-acetic acid (IAA) as examples, describe biosynthesis, regulation and role of hormones on plant growth and development. [14 Marks]
 - b) Describe the role of secondary metabolites on the plant adaptability to the environment.

[6 Marks]