



MACHAKOS UNIVERSITY
University Examinations for 2022/2023 Academic Year

SCHOOL OF AGRICULTURE, ENVIRONMENT AND HEALTH SCIENCES
DEPARTMENT OF AGRICULTURAL SCIENCES
SECOND YEAR FIRST SEMESTER EXAMINATION FOR
BACHELOR OF SCIENCE AGRICULTURAL EDUCATION AND EXTENSION
BACHELOR OF EDUCATION (SCIENCE)
BACHELOR OF EDUCATION (SPECIAL NEEDS)
HOR 211: PRINCIPLES OF HORTICULTURAL PRODUCTION

DATE:

TIME:

INSTRUCTIONS: Answer **Question ONE (Compulsory)** and Any other **Two** Questions.

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Distinguish phase I and phase II of vernilization (2 marks)
- b) Explain the two types of agricultural inputs that are excluded in organic horticultural farming (2 marks)
- c) Explain the relationship between porosity and bulk density of a growing media (2 marks)
- d) Explain four chemical characteristics that affect quality of irrigation water (4 marks)
- e) Describe four ways in which rhythm is achieved during landscaping (4 marks)
- f) Explain four benefits of growing horticultural crops in a greenhouse (4 marks)
- g) Describe the modified leader system of training horticultural crops (4 marks)
- h) Explain four principles of pruning (4 marks)
- i) Explain four characteristics of commercial horticultural farming (4 marks)

QUESTION TWO (20 MARKS)

- a) Describe the experiment that was conducted by Garner and Allard (1920) that led to the discovery of the effect of photoperiodism on crop production. (10 marks)
- b) Explain five advantages of using perlite in production of horticultural crops (10 marks)

QUESTION THREE (20 MARKS)

- a) Discuss four ways in which temperature control is achieved in the greenhouse (10 marks)
- b) With the aid of a well-labelled diagram, describe the recovery system of drip irrigation (10 marks)

QUESTION FOUR (20 MARKS)

- a) Discuss the requirements of the following EU directives that govern exports of fresh horticultural produce to the European Union
 - i. Regulation 1107/2009/EEC (5 marks)
 - ii. Regulation 396/2005/EC (5 marks)
- b) Discuss four factors that affect orientation of a greenhouse (10 marks)

QUESTION FIVE (20 MARKS)

- a) Describe five features of market gardening (10 marks)
- b) Discuss five farm-based requirements by Global-GAP (10 marks)