



"Investing in Africa's future"

COLLEGE OF HEALTH AGRICULTURE AND NATURAL SCIENCES

NACP 211: CROP PHYSIOLOGY

END OF SECOND SEMESTER EXAMINATION

APRIL 2026

LECTURER: MR NATHAN BANALYA

DURATION: 3 HRS

INSTRUCTIONS

Answer all questions in Section A and any **three** from Section B

Additional Material: Calculator

SECTION A (Answer ALL Questions in this Section)

QUESTION ONE

a). Define the following terms:

- i. crop physiology. (2 marks)
- ii. Photoperiodism. (2 marks)

b). Distinguish between Short day plants and Long day plants giving an example of each (6 marks)

c). i). Define Photosynthesis and write its' general formula. (5 marks)

ii). What is photosynthetic efficiency, and why is it significant for crop yield? (5 marks)

d). Differentiate between C3 and C4 photosynthetic pathways with one example of each crop. (6 marks)

e). Briefly explain:

- i. the role of stomata in regulating gas exchange and water loss. (5 marks)
- ii. the difference between source and sink in crop physiology? (5 marks)
- iii. why respiration is considered essential for crop productivity even though it consumes energy? (2 marks)

f). State two physiological adaptations of crops to drought stress. (2 marks)

SECTION B (Answer Any Three Questions in this Section)

QUESTION TWO

Discuss the physiological processes involved in seed germination and seedling establishment, highlighting factors that influence success in crop plants. (20 Marks)

QUESTION THREE

- a). Describe the process of transpiration in plants. (10 marks)
- b). Discuss the importance of transpiration in crop water relations. (10 marks)

QUESTION FOUR

Analyze the role of plant hormones (auxins, gibberellins, cytokinins, abscisic acid, ethylene) in crop growth and development. (20 Marks)

QUESTION FIVE

- a). Examine the physiological basis of drought tolerance in crops, including morphological and biochemical adaptations. (10 marks)
- b). Discuss the physiological responses of crops to abiotic stresses (heat, salinity, and waterlogging) and their implications for agricultural productivity. (10 marks)

QUESTION SIX

- a). Explain how rising temperatures influence the physiological processes of flowering, pollination, and grain filling in cereal crops. (10 marks)
- b). Discuss the impact of altered rainfall patterns and drought stress on assimilate partitioning and seed development in legumes. (10 marks)

END OF EXAM