INTERNATIONAL UNIVERSITY OF EAST AFRICA
'Learning to Succeed'

FACULTY OF BUSINESS MANAGEMENT

END OF SEMESTER EXAMINATIONS - AUGUST 2025

PROGRAMME: BTHM
YEAR/SEM: YEAR 1/SEMESTER 1
COURSE CODE: BTHM 1103
NAME: PLANT ECOLOGY

DATE:
TIME:

INSTRUCTIONS TO CANDIDATES:

SECTION A

Section A is a case study and it is Compulsory (40 marks)

Question 1:

Case study 1

Impotence of leaves in photosynthesis

Leaves are a vital component of plant anatomy, laying a crucial role in photosynthesis and plant growth. Photosynthesis is the process by which plants convert light energy into chemical energy, producing glucose and oxygen. Leaves come in various shapes and sizes each adopted to optimize photosynthesis in different environments. Leaves also have chloroplasts which contain pigment chlorophyll for absorbing sunlight energy.

The chloroplasts surround stomata which are small openings on the surface of leaves that allow for gas exchange, including the uptake of carbon dioxide and release of oxygen. The cuticle is a waxy layer on the surface of leaves that help to prevent water loss. The thickness and composition of the cuticle can vary depending on the environment.

Required

a. Explain the primary function of leaves in plants (15 marks)

b. Describe the adaptations of leaves to different environments and explain how these adaptations benefit the plant (15 marks)

c. Examine the function of epidermis in leaves (5 marks)

d. Describe five distinct leaf shapes of leaves and their characteristics (5 marks)

Question 2:

Case study 2

Desert plants

Desert plants have evolved various modifications to survive in the harsh arid environment. One such plant is the Cactus or Opuntia spp. It’s leaves have modified into sharp, pointed spines that reduce water loss through transpiration. The stems have thickened to store water and the roots have spread widely to absorb moisture from the soil. Another example is the Succulent plant which has thick, fleshy leaves that store water. The stems have modified into short, thick structures that support the leaves.

Required

(a. A Examine the advantages of leaf modification in desert plants like Cactus and Succulent plants (10 marks)

(b. Describe how modified stems of cactus and succulent plants contribute to their survival in the desert. (10 marks)

(c. Explain the importance of leaves to plants (10 marks)

(d. Discuss the unique features in the desert environment which appeal to the tourism industry (10 marks)

SECTION B

Answer any Three Question

Question 1:

a Describe the process of pollination in flowers. (10 marks)

b. Examine he factors which influence pollination of plants (10 marks)

Question 2:

Describe the various types of roots and their modifications, providing examples of how these adaptations enable plants to thrive in different environments (20 marks)

Question 3:

a. using specific examples, explain the structure and function of underground stems in plants. (10 marks)

b. Analyze the primary functions of stems to plants (10 marks)

Question 4:

a Describe the main differences between aerial roots and stilt roots(10 marks)

b. Discuss the remarkable adaptations of mangrove roots and their uniqueness compared to other roots. (10 marks)

Question 5:

Describe the different types of plant defensive mechanisms including the physical and chemical. (20 marks)

Question 6:

a Describe the different types of leaf arrangements in plants. (10 marks)

b Examine the adaptations of plants which survive in marshy environments (10 marks)

Question 7:

a. Differentiate between seeds and fruits (10 marks)

b. Describe the factors and adaptations which influence seed dispersal (10 marks)

Question 8:

a) Examine the significance of flora in facilitating tourism development in the tourism industry (10 Marks)

(b) Differentiate between primary and secondary growth in plants (10 Marks)

Question 9:

a) Examine the various plant cells responsible for giving rise to new tissues (10 Marks)

b Describe the root system and the functions of each part (10 marks)

Question 10:

a) Discuss the factors that influence the structure and composition of plant communities. (10Marks)

b) Explain the concept of ecological succession and how it shapes plant communities over time. (10 marks)

Question 11:

a Examine the adaptations of plants in the polar regions. (10 marks.)

(b. Discuss the characteristics of savanna vegetation. Clearly show it’s distinction from the vegetation found in the polar regions (10 marks.)

Question 12:

a. As a tourism student, discuss the relevancy of studying botany to your career.(10 marks)

(b. Examine the strategies to be used in order to conserve the environment for generations.(10 marks)