



UNIVERSITY OF FORT HARE
FACULTY OF SCIENCE AND AGRICULTURE
BOTANY DEPARTMENT

TIME: 3 HOURS

MARKS: 100

MODULE: BOT312

MODULE NAME: Plant Anatomy

-----JUNE EXAM 2023-----

**THIS PAPER CONSISTS OF TWO (2) PAGES, INCLUDING THE
COVER PAGE**

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INSTRUCTIONS:

Answer FOUR questions ONLY. Please note choice between Questions 3 and 4. Candidates are advised to make suitably labelled neat diagrams as an aid to answering the questions where applicable.

Question 1

- a) What are the constituents of the plant cell wall? (7)
b) Write notes to compare and contrast primary and secondary cell walls. (10)
c) What constitutes a stele? (3)
d) Elaborate on the role of endodermis in controlling the movement of water and mineral ions from the cortex to the stele. (5)
- [25 marks]

Question 2

With the aid of well-labelled diagrams, write elaborative notes on tissues produced by the meristems. [25 marks]

Question 3

Elaborate on the origin and development of the leaf. [25 marks]

Question 4

- a) Distinguish between the following terms:
i. Exarch and endarch
ii. Centrifugally and centripetally
iii. Heartwood and sapwood (6)
b) Using well-annotated diagrams, show how lateral roots originate. (7)
c) The vascular cambium has two morphologically distinct types of initials. Provide the two types of initial and write notes on them. (7)
d) Using at least one example, write a short note on anomalous secondary thickening in plants. (5)
- [25 marks]

OR

Question 5

Compare C3, C4 and CAM plants in terms of the following:

- a) Site of dark and light reactions in the leaf,
b) First product of carbon dioxide fixation,
c) Carbon dioxide acceptor,
d) Re-fixation of carbon dioxide,
e) Photorespiration, and
f) Rate of photosynthesis during stress conditions.

[25 marks]

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