

UNIVERSITY OF FORT HARE

BOT 211

DEGREE EXAMINATIONS

JUNE 2025

TIME: 3 HOURS

MARKS: 100

SUBJECT: BOTANY 211

PAPER: AN EVOLUTIONARY SURVEY OF THE PLANT KINGDOM

This paper consists of two pages including the cover page

EXAMINERS: Prof. CN Cupido
Prof. A Maroyi

ANSWER ALL QUESTIONS

Illustrate your answers, wherever possible with carefully labelled drawings or diagrams

ANSWER FOUR QUESTIONS

QUESTION 1

- 1.1 Contrast the following and give examples where possible
a) heterospory and homospory
b) eusporangiate and leptosporangiate ferns
c) monoecious and dioecious
d) gamete and gametangium
e) anisogametes and oogametes (10)
- 1.2 Name the two fundamental steps in sexual reproduction and how the chromosome number changes at each step (4)
- 1.3 Name any three (3) thallus types found in algae (3)
- 1.4 Use a diagram to present an overview of the broad classification of plants? Show the characters used to separate between them (8)

[25]

QUESTION 2

- 2.1 Explain the leading theory on the origin of life on Earth. (5)
- 2.2 Discuss how plants have evolved to adapt to land environments. Focus on the evolutionary transition from aquatic plants (like algae) to land plants (like bryophytes and ferns) (10)
- 2.3 Name and explain four (4) sources of organic variation essential for evolution to take place (10)

[25]

QUESTION 3

- 3.1 Explain the five-kingdom classification system proposed by Whittaker. Provide examples for each kingdom. (5)
- 3.2 Explain the general characteristics, life cycle, and ecological significance of ferns (5)
- 3.3 Discuss the classification, distribution, ecology, vegetative and reproductive morphology of the uniquely southern African plant, *Welwitschia mirabilis* (15)

[25]

QUESTION 4

- 4.1 Provide a detailed comparison between angiosperms and gymnosperms in terms of reproduction, structure, and ecological importance. Include examples of economically important species from each group (15)
- 4.2 Compare and contrast the adaptations of bryophytes and algae to their respective habitats. How do these adaptations reflect their evolutionary history? (10)

[25]

-----END-----