

UNIVERSITY OF SWAZILAND

SUPPLEMENATRY PAPER: JULY 2015

TITLE OF PAPER: SPERMATOPHYTA

COURSE CODE: B301

TIME ALLOWED: THREE HOURS

- INSTRUCTIONS:
1. THIS PAPER IS DIVIDED INTO FOUR SECTIONS
 2. ANSWER A TOTAL OF FOUR (4) QUESTIONS, CHOOSING ONE (1) QUESTION FROM EACH SECTION
 3. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS
 4. ILLUSTRATE YOUR ANSWER WITH LARGE AND CLEARLY LABELLED DIAGRAMS WHERE APPROPRIATE

SPECIAL REQUIREMENTS: NONE

THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATORS

SECTION A (PTERIDOPHYTES)
Answer one question from this section.

Question 1

- (a) Explain theories presented on the origins of microphyllous leaves. Use diagrams and specific examples to support your answer. (10 marks)
- (b) Discuss the life cycle of *Polypodium* using diagrams and brief notes. (15 marks)
- [Total = 25 marks]**

Question 2

- (a) Explain the evolution of:
- (i) lycopod sporophylls (enation theory), (5 marks)
 - (ii) equisetaceous sporangiophores. (5 marks)
- (b) Discuss the life cycle of *Selaginella*. Illustrate key stages. (15 marks)
- [Total = 25 marks]**

SECTION B (GYMNOSPERMS)

Answer one question from this section.

Question 3

- (a) Define a seed. How did seed evolve? (5 marks)
- (b) Explain secondary body formation in a gymnosperm that has four (4) ectopic collateral vascular bundles. Illustrate the following:
- (i) the primary body, (5 marks)
 - (ii) the resultant secondary body, (5 marks)
 - (iii) the secondary tissue production. (5 marks)
- (c) Differentiate between angiosperms and gymnosperms. (5 marks)

[Total = 25 marks]

Question 4

- (a) Prepare a table to differentiate between cycadales and coniferales. (5 marks)
- (b) Discuss the life cycle of a named gymnosperm of economic importance in Swaziland. Illustrate your answer. (15 marks)

[Total = 25 marks]

SECTION C (TAXONOMY)

Answer one question from this section.

Question 5

- (a) From the formula $\oplus \begin{matrix} \text{♂} \\ \text{♀} \end{matrix} K_2 + 2, C_4, A_{2+4}, \underline{G(2)}$,
Plus anthers are bilobed, placentation is parietal, Corolla is valvate, draw
(i) the floral diagram, (10 marks)
(ii) the half flower. (5 marks)
- (b) Describe each component of the flower in words. (10 marks)

[Total = 25 marks]**Question 6**

- (a) Discuss the evolution trend of monocotyledonous families and their gradual specialization for entomophily (Besseyan). Provide named examples and specific structures. (15 marks)
- (b) What do you suggest has contributed to the whole world being covered with grasses? (10 marks)

SECTION D (ANATOMY)

Answer one question from this section.

Question 7

Discuss the cells and tissues dedicated to the support of young plant parts.

(25 marks)

[Total = 25 marks]

Question 8

Discuss the tunica corpus theory as it relates to the origin of tissues in roots.

(25 marks)

[Total = 25 marks]

END OF EXAM PAPER