

UNIVERSITY OF SWAZILAND

MAIN EXAMINATION PAPER 2010/2011

COURSE CODE : B202

TITLE OF PAPER : PLANT MORPHOLOGY

TIME ALLOWED : THREE (3) HOURS

INSTRUCTIONS : 1. ANSWER ANY FOUR (4) QUESTIONS

2. EACH QUESTION CARRIES 25 MARKS.

3. ILLUSTRATE YOUR ANSWERS WITH LARGE AND CLEARLY LABELLED DIAGRAMS WHERE APPROPRIATE

SPECIAL REQUIREMENTS : NONE

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATOR(S).

QUESTION 1.

Give a detailed description of the Angiosperm lifecycle and provide appropriate illustrations. [25 Marks]

QUESTION 2.

Describe and illustrate the morphology of the following fruits:-

[a]. Sweet orange (*Citrus sinensis*). [8 Marks]

[b]. Guava (*Psidium guajava*). [8 Marks]

[c]. Pineapple (*Ananas comosus*). [9 Marks]

[Total 25 Marks]

QUESTION 3.

Give an illustrated account of venation in both simple and compound leaves.

[25 Marks]

QUESTION 4.

Buds are significant in the development of the shoot and general plant canopy.

[a]. Describe buds and highlight any modifications that may occur in them. [10 Marks]

[b]. Discuss the phylotaxy in higher plants. [15 Marks]

[Total 25 Marks]

QUESTION 5.

Describe the sepal and petal patterns that may occur in Angiosperms and comment on their contribution to plant taxonomy.

[Total 25 Marks]

QUESTION 6.

Floral morphology may be summarised by means of a floral formula. Suppose garden bean *Phaseolus vulgaris* flowers may be summarised in a floral formulae as given below. Describe the *P. vulgaris* flowers fully and illustrate them.

$K_{(5)} C_5 A_{1+(9)} \underline{G}_{(5)Z}$

[25 Marks]

[TOTAL MARKS: 100]

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER: DECEMBER 2010

TITLE OF PAPER: BIOCHEMISTRY & CELL BIOLOGY

COURSE CODE: B203

TIME ALLOWED: THREE HOURS

- INSTRUCTIONS:
1. ANSWER ANY FOUR QUESTIONS.
 2. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS
 3. ILLUSTRATE YOUR ANSWERS 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

[PLEASE TURN OVER]

Question 1

- (a) What are glycans? (5 marks)
- (b) Using examples, write explanatory notes on the following carbohydrates:
 (i) simple, (4 marks)
 (ii) storage, (4 marks)
 (iii) structural. (4 marks)
- (c) With reference to disaccharides, explain the difference between reducing and non-reducing sugars. (8 marks)

[TOTAL MARKS = 25]**Question 2**

- (a) Name the most common chemical component of hydrolysable lipids and briefly describe its structure, properties and functions in biological systems. (15 marks)
- (c) Explain the significance of acetyl co-enzyme A in metabolism. (10 marks)

[TOTAL MARKS = 25]**Question 3**

- (a) Using examples, distinguish between conjugated, fibrous and globular proteins. (9 marks)
- (b) With reference to proteins, explain the term "conformation" and briefly describe the various levels of protein structure. (16 marks)

[TOTAL MARKS = 25]**Question 4**

- (a) Name the various classes of enzyme and briefly explain the function of each in biochemical reactions. (12 marks)
- (b) What are enzyme inhibitors? Explain how a nerve gas and penicillin inhibit the action of enzymes. (13 marks)

[TOTAL MARKS = 25]**Question 5**

- (a) What are the starting materials and products of glycolysis? Briefly explain the fate of the products in metabolism. (13 marks)
- (b) Explain how the Krebs cycle generates CO₂, ATP, NADH and FADH₂. (12 marks)

[TOTAL MARKS = 25]**Question 6**Write concise notes on any **two** of the following:

- (a) Nucleic acids and protein synthesis, (12½ marks)
 (b) Dark reactions of photosynthesis, (12½ marks)
 (c) Gluconeogenesis. (12½ marks)

[TOTAL MARKS = 25]**END OF QUESTION PAPER**