

UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER 2007/2008

COURSE CODE : B402  
TITLE OF PAPER : PLANT PHYSIOLOGY  
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 :

CANDIDATES MAY BRING THEIR CALCULATORS. GRAPH PAPER MAY BE PROVIDED ON REQUEST.

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

QUESTION 1.

Give a critical description of the C<sub>4</sub> pathway of photosynthesis.

[25 Marks]

QUESTION 2.

Give an account of the functions of cytokinins in plants.

[25 Marks]

QUESTION 3.

Discuss the possible functions of Nitrogen in the nutrition of plants.

[25 Marks]

QUESTION 4.

Describe the effects of water stress on higher plants.

[25 Marks]

QUESTION 5.

Describe and make observations on the physico-chemical parameters that may regulate solute mobility across plant cell membranes. Calculate the Nernst Potentials in the scenario presented below:

SOLUTE	C <sub>o</sub> (mM)	C <sub>i</sub> (mM)	E <sub>M</sub> (mV)
Cl <sup>-</sup>	2.0	100	140
K <sup>+</sup>	0.11	150	140
Na <sup>+</sup>	1.3	20	140

NB. R = 1.58/mol-deg; T = 298K; F = 23060 cal/volt.

[Total 25 Marks]

QUESTION 6.

Explain how mineral nutrient uptake may be undertaken by higher plants.

[25 Marks]

[TOTAL MARKS: 100]