

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**

FACULTY OF APPLIED SCIENCES  
BACHELOR OF SCIENCE HONOURS DEGREE EXAMINATIONS  
DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY

**THEORY: PLANT PHYSIOLOGY SBB 1105**

DECEMBER 2002

2 HOURS (100 marks)

**INSTRUCTIONS**

Answer Four (4) Questions. Each question carries 25 marks. Where a question contains subdivisions, the mark value for each subdivision is given in brackets. Illustrate your answer where appropriate with large, clearly labelled diagrams.

1. Describe the structural characteristics of the C4 leaf type. Show how these relate to the physiological and biochemical characteristics of C4 plants.
  
2. Describe and discuss the process of photorespiration in higher plants. Include a description of the pathway and its cellular location.
  
3. Write short notes on the following:
  - (a) allelopathy (10 marks)
  - (b) ecophysiological significance of dormancy (15 marks)
  
4. Discuss factors affecting respiration in plant tissues.
  
5. Describe nitrogen fixation by a *Rhizobium* spp. Include the factors affecting the process of biological nitrogen fixation.
  
6. Why are some elements required by plants in much greater amounts than others? Illustrate your answer by describing the roles of five named essential elements.

**END OF EXAMINATION PAPER**