BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULT OF AGRICULTURE AND ENVIRONMEMNTAL SCIENCE

NR125

DEPARTMENT OF CROP SCIENCE

BACHELOR OF AGRICULTURAL SCIENCE (HONOURS) DEGREE PART I EXAMINATION

PLANT BIOLOGY

3 HOURS [100 MARKS]

INSTRUCTIONS

ANSWER ANY *FOUR* QUESTIONS. EACH QUESTION CARRIES *25 MARKS*

1 (a) Explain the transpiration cohesion-tension theory. (5 marks)

(b) Analyze the following physiological factors on transpiration:
i. Leaf structure (6 marks)
ii. Stomatal density. (5 marks)

(c) Elaborate on the mechanism of opening and closing of stomata. (9 marks)

2 (a) With the aid of a diagram, explain the process of the light reaction in photosynthesis. (12 marks)

(b) Compare and contrast C3 and C4 photosynthesis pathways including the anatomical and biochemical adaptations. (8 marks)

(c) Explain the concept of parthenocapy in plant reproduction. (5 marks)

3 (a) Explain the role of meristems in plant growth and development. (9 marks)

(b) Discuss the process of cell expansion in plant growth. (8 marks)

(c) Evaluate the process of cell differentiation in plant development. (8 marks)

4 (a) Analyze the functions of each seed component and their contributions to seed germination and early seedling growth. (10 marks)

(b) Evaluate the phenomenon of apomixis in plant reproduction. (15 marks)

5 (a) Explain the fate of the fixed carbon in terms of carbohydrate synthesis. (10 marks)

(b) Compare and contrast C3 and C4 photosynthesis pathways including the biochemical and anatomical adaptations. (15 marks)

6 (a) Discuss the events that occur during microsporogenesis and megasporogenesis. (15 marks)

(b) Discuss the concept of double fertilization in plants. (10 marks)

END OF EXAMINATION