



**RAJARATA UNIVERSITY OF SRI LANKA  
FACULTY OF APPLIED SCIENCES, MIHINTALE**

**B.Sc. (General) Degree in Applied Sciences**

**Second Year– Semester I Examination –Oct/Nov 2015**

**BIO 2204 – PLANT PHYSIOLOGY**

**Time: Two (2 ) hours**

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**Answer four (4) questions only. Use fully labeled diagrams wherever appropriate.**

1.
  - a. Describe the basic characteristics of a photosystem and explain how photosystem I differs from photosystem II.
  - b. How does the pathway of carbon fixation differ from the  $C_3$  pathway?
  - c. How do  $C_4$  plants increase their water use efficiency?
  - d. What is leaf Kranz anatomy? Explain its importance in  $C_4$  photosynthesis.
2.
  - a. What is Liebig's Law of Minimum?
  - b. How do roots actively increase the availability of mineral nutrients that are cations?
  - c. Why do organic fertilizers generally contaminate water resources less than industrially produced inorganic fertilizers?
  - d. How do the nitrogen fixing bacteria of root nodules benefit from their symbiotic relationship with plants?
  - e. How do mycorrhizae improve the nutrition of the forest tree seedlings?

**P.T.O**

3.
  - a. Discuss the major steps involved in aerobic respiration.
  - b. How is fermentation of microbial cells different from aerobic respiration?
  
4.
  - a. Explain the main mechanism of water absorption to the roots of a plant growing in a soil of high salt concentration.
  - b. How does water move from the soil solution to the root xylem in a land plant?
  
5. Write short notes on
  - a. photoperiodism
  - b. phototropism
  - c. phloem loading