THE OPEN UNIVERSITY OF SRI LANKA

B.Sc./B.Ed. DEGREE PROGRAMME

BOTANY – LEVEL 04

FINAL EXAMINATION – 2009/2010

BTU2201/BTE4201 – PLANT PHYSIOLOGY (PAPER I)

DURATION : TWO AND A HALF (2 ½) HOURS

DATE : 12.07.2010 **TIME: 9.30 a.m. – 12.00 noon**

ANSWER ANY FOUR(04) OF THE FOLLOWING QUESTIONS.

01. (a) Describe the fluid mosaic model of biological membranes.

(b) State the major functions of biological membranes and indicate how the structure of the membranes help in carrying out these functions.

02. (a) What are the criteria by which an element is considered as essential for plants?

(b) Briefly state the difference between essential and beneficial elements.

(c) Name three macro elements when deficient in plants cause chlorosis in the leaves. How would you distinguish these three elements from their deficiency symptoms seen on the foliage?

(d) Briefly explain how mycorrhizea help in the absorption of mineral ions by plant roots.

03. (a) Briefly describe the structure of a water molecule.

(b) Discuss the significance of water to living organisms.

04. Write briefly on the following.

(a) Role of stomata in transpiration.

(b) Mechanism of phloem loading and unloading.

05. (a) What is meant by "ascent of sap in plants"?

(b) Explain how water from the root xylem is moved to the top of tall trees.

(c) If the water column in the xylem breaks, how is it re-established?

06. Write short notes on the following.

(a) Hydroponics culture of plants and its importance in horticulture.

(b) Soil characteristics which influence the soil water status.

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BOTANY – LEVEL 04

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BTU2201/BTE4201 – PLANT PHYSIOLOGY (PAPER II)

DURATION : TWO AND A HALF (2 ½) HOURS

DATE : 12.07.2010 **TIME: 1.00 p.m. – 3.30 p.m.**

ANSWER ANY FOUR(04) OF THE FOLLOWING QUESTIONS.

01. (a) What is the key regulatory hormone in apical dominance?

(b) Give three other physiological processes controlled by the hormone you mentioned in (a)

(c) Give two (02) applications of this hormone in agriculture.

(d) Briefly describe its biosynthetic pathway.

02. (a) What is photorespiration? What are the cell organelles involved in this process?

(b) Why is it considered to be a wasteful process?

(c) "The leaf anatomy and the CO_2 fixation process in C_4 plants reduce photorespiration" Comment on this statement.

03. (a) Explain the basis on which flowering plants are separated into three groups depending on the effect of day length on flowering.

(b) What is phytochrome? Discuss its effect on the flowering of long-day and short-day plants.

(c) Briefly describe the role of phytochrome in plants other than flowering.

04. Write briefly on the following.

(a) Diurnal variation of acid content in crassulacean plants.

(b) Biochemical changes leading to the mobilization of stored food during cereal grain germination.

05. (a) What is meant by "stress"?

(b) Differentiate between biotic stress and abiotic stress.

(c) List the major environmental stress causing factors to plants and describe the various strategies adopted by plants to minimize these stresses.

06. Write short notes on the following.

(a) Main events that take place in glycolysis and its significance.

(b) Enzyme inhibition.