THE OPEN UNIVERSITY OF SRI LANKA

B.Sc./B.Ed. DEGREE PROGRAMME – 2008/2009

BOTANY – LEVEL 04

BTU 2201/BTE 4201 – PLANT PHYSIOLOGY

ASSESSMENT TEST I – (OPEN BOOK TEST)

DURATION : ONE (01) HOUR

Registration No. .....

DATE : 30th January 2009 **TIME: 4.00 p.m. – 5.00 p.m.**

ANSWER ALL QUESTIONS IN THE SPACE PROVIDED.

01. Fill in the blanks with the appropriate word/words to complete the following statements.

(a) Endoplasmic reticulum is called "rough" when it has _____ embedded in its surface.

(b) The presence of a rigid _____ _____ is the fundamental difference between a plant and an animal cell.

(c) The main polymer that forms a plant cell wall is _____.

(d) The single membrane that surrounds the vacuole is known as the _____.

(e) Amino acids are joined together by _____ bonds involving the _____ group of the amino acid and the _____ group of the other.

(f) Proteins that have other chemical components in addition to amino acids are called _____ proteins.

(g) Negative pressure (or tension) within the xylem is caused by the upward pull of water due to _____.

(h) Substances that can reduce transpiration when sprayed on to the foliage are called_____.

(i) The structures on leaves through which liquid water is lost are called _____

(j) _____ is the most abundant lipid in a cell membrane.

(k) Membrane carbohydrates when bonded to proteins are called _____.

(l) The plant hormone that controls closure of stomata in response to water stress is _____ _____.

(m) In plants, continuity of the simplest is achieved by _____.

(n) Water potential measures the tendency of water to _____ from One place to another.

(o) A mycorrhiza is a combination of a root and a _____.

(p) It has been clearly demonstrated that K^+ are responsible for the reduction of _____ _____ in guard cells.

(q) Starch sugar hypothesis assumes the guard cell turgidity to be controlled by the inter-conversions of _____ and _____.

02. Indicate whether the statements given below are true (T) or false (F) before each statement.

..... (a) The structure of a protein can be denoted by the polar bonds of water molecules.

..... (b) Sucrose is the most common material transported in the phloem.

..... (c) Phloem translocation takes place from areas of utilization (sinks) to areas of synthesis (source)

..... (d) In ectomycorrhizae, fungal hyphae do not penetrate into the plant cells.

..... (e) The technique of growing plants with their roots immersed in nutrient solution is referred to as hydroponics.

..... (f) The sieve tube members of dicotyledons are usually rich in a protein referred to as P-protein.

..... (g) Companion cells are thought to synthesize proteins and also supply energy to sieve elements.

..... (h) In gymnosperms, sieve plates are not clearly displayed.

..... (i) Water potential of a cell is lowered by the addition of water.

..... (j) In a cell, protoplasm is the major contributor to the matric potential.

03. (a) What are the <u>three</u> major ways by which mineral ions reach root surfaces?

(i) .....

(ii) .....

(iii) .....

(b) What are mycorrhizae?

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(c) Differentiate between ecto and endomycorrhizae.

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(d) Briefly explain the importance of mycorrhizae to plants.

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(e) Explain the following terms:

(i) Uniport

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(ii) Antiport

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(iii) Symport

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04. (a) What is transpiration?

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(b) What are the major ways in which water is lost from plant surfaces?

(i) .....

(ii) .....

(iii) .....

(c) List the environmental factors that affect the rate of transpiration.

(i) ..... (iv) .....

(ii) ..... (v) .....

(iii) ..... (vi) .....

(d) Briefly explain the significance of transpiration to plants.

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(e) Define the following terms.

(i) Anti-transpirants

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(ii) Evaportranspiration

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(iii) Root pressure

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