Uganda Martyrs University

Faculty of Agriculture

Semester I Final Assessment: 2015/2016

B. Agriculture Year 1

Course Unit: CRE 1102: PLANT ANATOMY & PHYSIOLOGY

Time: 9:30 am – 12:30 pm

Date: Friday, 04TH December, 2015

Instructions:

- Answer **any 4** of the following **8**
- questions
- Please read the instructions carefully before answering the questions

1(a). Draw and label **a plant cell** and using a table give 4 differences between a plant cell and an animal cell?

(b). Describe the **nature and roles** of the following parts of the plant cell:

i) Cell wall

ii) Cell membrane

iii) Vacuole

iv) Chloroplast.

2(a) As a plant grows; its cells become specialized in order to perform certain functions necessary for the plant's survival. Name five (5) examples of **specialized plant cell types** and **in detail describe the functions** performed by each one of them.

(b). Name the functions of the different organs of a flowering plant.

(c) How do plants grow in size width? Illustrate your answer with aid of simple diagrams.

3 (a). Draw and label a cross section of a plant leaf and outline 5 different characteristics which show that a typical leaf is well adapted for photosynthesis.

(b) Describe the **nature** and **roles** of the following parts of the plant leaf:

i) Epidermis

ii) Mesophyll

iii) Veins.

(c) Draw a diagram showing the structure of stomata in **either maize or onion leaves**. How are stomata adapted to their function and what is that function?

4 (a). With aid of labeled diagrams, explain the differences between monocotyledonous and dicotyledonous stems.

(b) Explain the nature and functions of the following parts in a plant:

i) Epidermis

ii) Endodermis

iii) Vascular tissue.

5 (a). What is **plant sap** and what does it consist of (be specific)?

b). Explain the processes by which plant sap moves in the plant and its main roles.

c) During photosynthesis what is meant by the terms 'light reaction' and 'dark reaction'?

6(a) Give three criteria that an element must fulfill for it to qualify to be essential for plant growth and development.

(b) Write up an experiment you would perform to prove that an element is essential for plant growth.

7. **a)** Discuss the importance of water to plants and with the aid of a diagram explain how plants absorb water from the soil. What is the role of stomata in that process?

b) A tree weighing 200kg loses three times its weight of water daily. Calculate the amount of water (in litres) lost by that tree every day. What does the figure that you get inform you about water use in a big forest and rainfall associated with forests?

8. **a)** With the aid of a diagram discuss the diurnal curves of stomatal opening and closure in broad-leaved dicotyledon and succulent plants.

b) With examples, explain the difference between C_3 and C_4 plants. Why are C4 plants considered to be more efficient than the C3 plants?