



# **EMBU UNIVERSITY COLLEGE**

**(A Constituent College of the University of Nairobi)**

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**2015/2016 ACADEMIC YEAR**

**SECOND SEMESTER EXAMINATION**

**SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (AGRICULTURE), BACHELOR OF SCIENCE (AGRIBUSINESS MANAGEMENT), BACHELOR OF SCIENCE (RANGE MANAGEMENT) AND BACHELOR OF SCIENCE (MANAGEMENT OF AGRO-ECOSYSTEMS AND ENVIRONMENT)**

**ACS 104: INTRODUCTION TO PLANT/CROP PHYSIOLOGY**

**DATE: APRIL 11, 2016**

**TIME: 11:00-1:00**

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**INSTRUCTIONS:**

**Answer Question ONE and ANY Other TWO Questions**

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**QUESTION ONE**

- a) i) Outline five importance of water in a plant life. (5 Marks)
- ii) A plant cell with a water potential of  $-960$  kPa is immersed in a glucose solution whose water potential is  $-350$  kPa. Explain the direction of water flow. (3 Marks)
- b) Using appropriate example show the three categories of organisms involved in biological fixation. (3 Marks)
- c) Distinguish between
- i) C<sub>3</sub> and C<sub>4</sub> plants (2 Marks)
- ii) Sexual and asexual reproduction (2 Marks)
- d) Outline any five ways of breaking seed dormancy. (5 Marks)
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- e) Explain the process of double fertilization in plants. (5 Marks)
- f) Describe the ringing experiment as an evidence of food translocation. (5Marks)

### **QUESTION TWO**

- a) Using an illustration describe the fluid mosaic model of plasma membrane. (15 Marks)
- b) Explain the physiological functions of a cell membrane. (5 Marks)

### **QUESTION THREE**

- a) Describe the cohesion-tension theory of transpiration. (10 Marks)
- b) In order to maximize photosynthesis plants grow and bend towards light, a process known as phototropism. Outline the experiments that could be carried out to support the hypothesis that phototropism is caused by auxin produced by growing tip. (10 Marks)

### **QUESTION FOUR**

- a) Illustrate the major steps in breakdown of glucose to pyruvic acid. (10 Marks)
- b) Tabulate the differences between photosynthesis and respiration . (10 Marks)

### **QUESTION FIVE**

- a) Give the experimental demonstration to show that essential nutrients are necessary for the normal development of green plants. (10 Marks)
- b) Briefly outline the dark reaction in plant photosynthesis. (10 Marks)

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