UNIVERSITY OF EMBU

2017/2018 ACADEMIC YEAR

SECOND SEMESTER EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (BIOCHEMISTRY)

SBC 104: PLANT PHYSIOLOGY

DATE: APRIL 12, 2018 **TIME: 2:00 – 4:00 PM**

INSTRUCTIONS: Answer any ten (10) questions (7 marks each)

1. a) Categorize the organisms involved in biological nitrogen fixation. (3 marks)
   b) Describe abscission (4 marks)

2. a) Evaluate the methods of breaking seed dormancy. (5 marks)
   b) Draw a well labeled diagram of a typical flower. (2 marks)

3. a) Justify the flow of water when a plant cell with a water potential of -670 kPa is immersed in a glucose solution whose water potential is -230 kPa. (5 marks)
   b) Outline the importance of osmosis in plant cells. (2 marks)

4. a) Illustrate the process of double fertilization in plants. (4 marks)
   b) Differentiate between sexual and asexual reproduction in plants (3 marks)

5. Evaluate use the ringing experiment as an evidence of food translocation. (7 marks)
6. Discuss the roles of gibberellins in plant growth. (7 marks)

7. a) Demonstrate that minerals are essential for plant growth. (5 marks)

   b) Explain apical dominance (2 marks)

8. a) Describe the two types of seed germination in plants. (4 marks)

   b) Explain any three external factors necessary for germination. (3 marks)

9. a) Draw a well labeled structure of a monocotyledon seed. (5 marks)

   b) List any four chemical components of a seed. (2 marks)

10. With the help of a diagram of a root explain the three phases of growth. (7 marks)

11. Describe the uptake of mineral salts through apoplast pathway (7 marks)

12. a) Explain the term senescence in plants (1 mark)

    b) Compare cyclic and non-cyclic photophosphorylation (6 marks)

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