



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

**SECOND SEMESTER EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE AND BACHELOR OF EDUCATION**

SBT 310 : PLANT BIOCHEMISTRY AND PHYSIOLOGY

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DATE: FRIDAY 30TH MARCH 2012

TIME: 2.00 P.M. – 4.00 P.M.

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INSTRUCTIONS

Answer ALL questions in Section A and any ONE in Section B. Answers to Section A should be concise and written in the spaces provided on the question paper

SECTION A

Short answer questions (5 marks each)

1. How are auxins synthesized through deamination and decarboxylation of tryptophan?

2. Photorespiration is considered as a necessary evil in C_3 plants. Briefly discuss
3. Compare and contrast the Cholodny-Went hypothesis and Starch-Statolith theory used in explaining the mode of action of auxins.

4. How are the following bonds formed during the synthesis of the relevant macromolecules in plants?
- a) Glycosidic bonds
 - b) Ester bonds
 - c) Peptide bonds
5. Briefly discuss the accumulation of organic acids in the succulent plant, *Bryophyllum caylcinum*
6. What are α -keto acids? By using specific biochemical reactions, explain their roles in amino acid synthesis.

7. Complete the table given below, on the processes of nitrogen circulation in the biosphere

Reservoir	Process	Microorganism
Soil	Nitrification	
		<i>Pseudomonas denitrificans</i>
	Nitrogen fixation	
Soil	Decomposition	

8. What are coenzymes and vitamins? Give the roles in plant metabolism, of any three examples of each group.

SECTION B (Essays) (30 marks each)

1. The Calvin-Benson cycle is central to carbon dioxide fixation and reduction in all higher plants. Discuss this statement.
2. Discuss the degradation sequence of a saturated fatty acid.
3. Write an essay on photoperiodism in plants.