



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

THIRD YEAR SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN BIOLOGY

SBT 310: PLANT PHYSIOLOGY AND BIOCHEMISTRY

DATE: 16/3/2022

TIME : 2:00 – 4:00 PM

INSTRUCTIONS

Instructions

1. Answer Question 1 (**compulsory**) and **any two** questions in Section B.
2. Use clean well labelled diagrams wherever appropriate.

SECTION A

Question 1. – Compulsory (30 marks) –

- i. Differentiate between the following terms:-
 - (a). amylose and amylopectin (2 marks)
 - (b). Tropic and nastic movements (2 marks)
- ii. Illustrate the formation of a triglyceride (3 marks)
- iii. Describe the biosynthetic pathways of amino acids (3 marks)
- iv. Explain the dietary importance of vitamins (3 marks)
- v. Explain the functions of NADH and FADH in metabolic reactions (3 marks)
- vi. Describe the Phytochrome system and its role in plants (3 marks)
- vii. Explain the term vernalization and its importance in plants (3 marks)
- viii. Outline the enzymes that bind CO₂ in C₃ and in CAM plants (2 marks)
- ix. Classify plants based on their photoperiodism (3 marks)
- x. Outline the physiological effects of gibberellic acid in plants (3 marks)

SECTION B

QUESTION 2

- (a). Differentiate between non-cyclic and cyclic electron flow (5 marks)
- (b). Discuss carbon assimilation pathway in C₄ Plants (15 marks)

QUESTION 3

Describe the β- oxidation of fatty acids (20 marks)

QUESTION 4

Discuss nitrogen metabolism (20 marks)

QUESTION.5

Discuss protein synthesis (20 marks)