

P530/2
BIOLOGY
(Theory)
Paper 2
Jul /Aug 2019
2 ½ Hours



MUKONO EXAMINATIONCOUNCIL
Uganda Advanced Certificate of Education
BIOLOGY
Paper 2
2hours 30 minutes

INSTRUCTIONS TO CANDIDATES

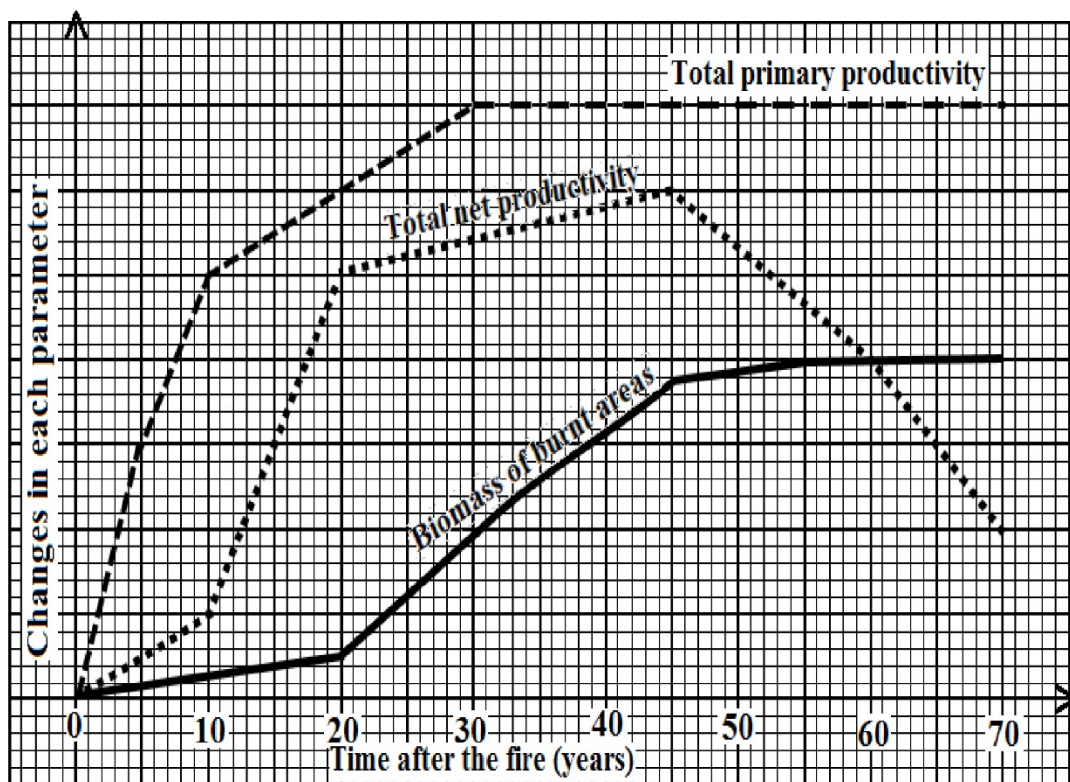
*This paper consists of **six** questions.*

*Answer **one** in section **A** plus **three** others from section **B**.*

Candidates are advised to read the questions carefully, organize their answers and present them precisely and logically, illustrating with well labelled diagrams where necessary.

SECTION A (40 MARKS)

1. The figure below shows the effect of fire on the changes in total primary production, total net productivity and biomass of the area after recovery



- a) Compare the relationship in the trend of biomass and total net productivity **(04 marks)**
- b) Explain the changes in each of the following during the period of investigation
 - (i) total primary productivity **(10 marks)**
 - (ii) total net productivity **(08 marks)**
 - (iii) biomass **(05 marks)**
- c) Explain the relationship between total net productivity after 45 years with;
 - (i) total net productivity **(03 marks)**
 - (ii) biomass **(02 marks)**
- d) Suggest and explain what would happen to the total net productivity if the area was invaded by many herbivores. **(04 marks)**
- e) What is the ecological significance of fire on an ecosystem? **(04 marks)**

SECTION B

2. a) Differentiate between osmosis and active transport **(06 marks)**
- b) Explain how the mass flow accounts for the transport of water in plants. **(10 marks)**
- c) What are the challenges of mass flow to the translocation in the phloem **(04 marks)**
3. a) Compare the action of auxins and gibberellins in higher plants. **(12 marks)**
- b) Explain the effect of light interruptions on flowering. **(08 marks)**
4. a). Describe the structure of an enzyme. **(06 marks)**
- b). How is the structure of the cell membrane proteins related to their function? **(08 marks)**
- c). Explain the factors that cause denaturation of a protein. **(07 marks)**
5. a) Describe the process of metamorphosis in insects. **(06 marks)**
- b) Explain the role of hormones in insect metamorphosis. **(09 marks)**
- c) What is the significance of metamorphosis in the life of an insect? **(05 marks)**
6. a) Explain the role of each of the following in evolution
- (i) Mutation **(06 marks)**
- (ii) Predation **(05 marks)**
- b) How does the concept of development and distribution of Darwin's finches explain evolution? **(09 marks)**

END