P530/2
BIOLOGY
(Theory)
Paper 2
2022
2 ½ hours

MATIGO MOCK EXAMINATIONS 2022
UGANDA ADVANCED CERTIFICATE OF EDUCATION

BIOLOGY

(THEORY)

Paper2

2hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

*This paper consists of section; **A** and **B.***

*Answer question **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 labeled diagrams where ever necessary.

SECTION A: (40 MARKS)

1. Experiment was carried out on culture of a unicellular proctist to investigate the effect of light and carbondioxide on certain metabolites.

   In this experiment, the levels of phosphogylceric (PGA), Ribulose Biphosphate (RuBP) and sucrose in the proctist were determined at different time intervals in the presence of light. At the 35th minute, light was switched off suddenly putting the proctists in darkness and the results were presented in the figure 1 below. Study the figure carefully and then answer the questions.

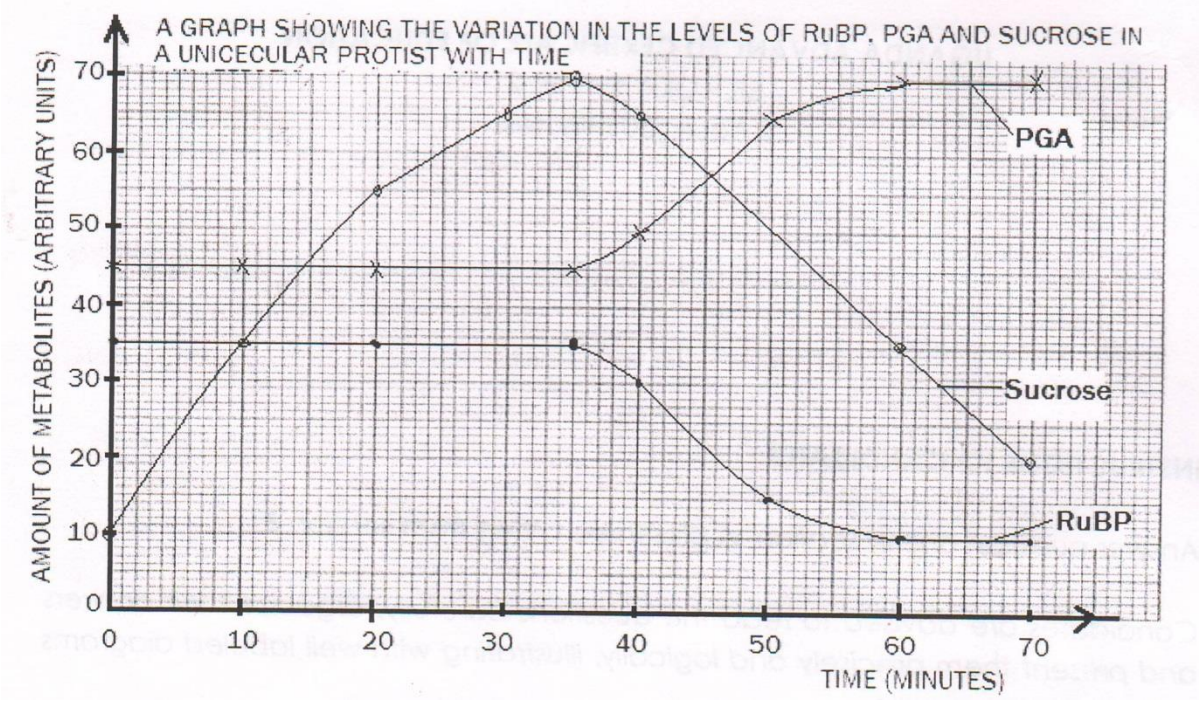

FIG.1

a) Describe the relationship between the amount of sucrose and PGA throughout the experiment. *(7 marks)*

b) Explain,

   i. Variations between the amount of phosphoglyceric acid (PGA) and Ribulose Biphosphate (RuBP) over the range of the time intervals. *(16 marks)*

   ii. Change in the amount of sucrose in the course of the experiment. *(8 marks)*

c) Predict the changes in the amount of PGA and RuBP if the experiment continued for more minutes after the 70 minutes. *(4 marks)*

d) Briefly explain how the organism will utilize PGA which is available in the culture medium. *(5 marks)*

SECTION B :(60 MARKS)

2. a) Describe different ways by which continuous exercise promote muscle performance in humans. *(7 marks)*

   b) Explain how flight is achieved in insects. *(13 marks)*

3. a) Explain how each of the following evolutionary mechanisms will lead to speciation.
   i. Geographical isolation. *(8 marks)*
   ii. Polyploidy. *(6 marks)*

   b) Explain how vestigial organs provide support for organic evolution. *(6 marks)*

4. a) Describe the features common to all nerve impulses. *(6 marks)*

   b) Explain how action potential and repolarisation is achieved across membrane of a motor neurone. *(14 marks)*

5. a) Describe the interactions of various species of organisms in an ecosystem. *(9 marks)*

   b) Explain ecological significance of each of the following factors in an eco-system.
   i. Competition. *(5 marks)*
   ii. Host- parasite relationship. *(6 marks)*

6. a) Compare polysaccharides and polypeptides. *(6 marks)*

   b) Describe the process of formation of Ribosomes in the cell. *(7 marks)*

   c) Explain the structure of protein that suits its functions. *(7 marks)*

END