

Name's of student.....
School Name.....

**BIOLOGY
PAPER II
P530/2
SENIOR SIX
OCTOBER**



**COMPREHENSIVE BIOLOGY TRANSFORMATION INITIATIVE.
UACE
POST MOCK- EXAMINATION
S.6 CANDIDATES-2023
PAPER 2
2 HOURS AND 30 MINUTES**

INSTRUCTIONS TO THE CANDIDATES:

This paper consists of section A and B.

Answer question one in section A plus 3 questions in section B

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

Adapt to the 21st century Pedagogical skills.

SECTION B (40 MARKS).

N.B Question 1.0 is Compulsory to all Candidates.

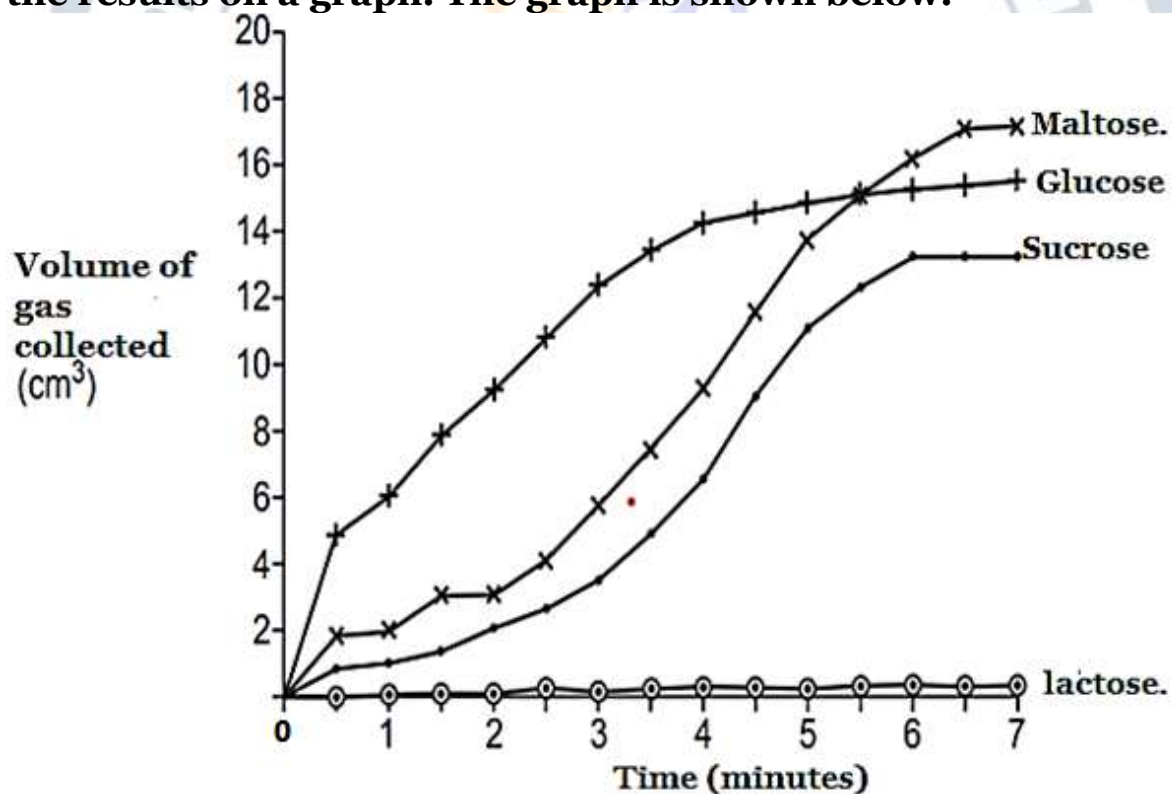
1.0. A student investigated the effect of different sugars: Maltose, glucose, sucrose and lactose on the respiration rate in yeast.

The student followed the following key steps.

- Prepared a stock solution of yeast containing 10g of dried yeast in 250cm³ of pH buffer.
- Prepared solutions of each sugar containing 5g of sugar in 250cm³ of distilled water.
- Kept the yeast and sugar solutions in a water bath at 35°C.
- Set up the apparatus with a 250cm³ conical flask connected by a rubber tube to a 100cm³ gas syringe.
- Added 25cm³ of yeast solution and 25cm³ of sugar solution to the flask, immediately connected the flask to the gas syringe and start the clock.
- Recorded the volume of gas produced after every 30s for 7 minutes.

- Repeated the experiment 5 times for each different sugar.

The student calculated mean values for each sugar and plotted the results on a graph. The graph is shown below.



- a) Calculate the rate of respiration for each sugar.
during the first five minutes. (03 marks)
- b) Describe the changes in the volume of gases collected by the following sugars.
- (i) Maltose.
 - (ii) Glucose.
 - (iii) Sucrose.
 - (iv) Lactose. (10 marks)
- c) Explain the changes described in (b) for each carbohydrate.
- (i) Lactose. (02 marks)
 - (ii) Sucrose. (05 marks)
 - (iii) Maltose. (05 marks)
 - (iv) Glucose. (05 marks)
- d) Suggest explanations for the following.
- (i) Why Maltose had the highest volume of gas collected after 5 minutes? (03 marks)
 - (ii) What would happen to the volume of gas collected by sucrose and glucose if the experiment is continued for more 2 minutes? (03 marks)
 - (iii) Addition of the P^H buffer to the set up. (02 marks)
 - (iv) Temperature of water bath kept at 35°C. (02 marks)

SECTION B (60 MINUTES)

Question. 2.0.

- a (i)What is meant by the term leaf area index? (03 marks)
- (ii) Explain the significance of the leaf area index to plants. (07 marks)
- b) Describe how communities change over time. (10 marks)

Question 3.0.

- a) Explain how the following organisms show evolutionary adaptations to their habitats.
- (i) Migratory fish. (05 marks)
 - (ii) Sea birds. (05 marks)
- b) How does disruptive selection explain the varied beak shape in the Galapagos finches? (10 marks)

Question 4.0.

- a) Describe the adaptations of the pre-synaptic bulb to its role. (10 marks)
- b) Explain how the synapses are able to control communications along the nervous system. (10 marks)

Question 5.0.

- a) Explain ways how the control and coordination of enzymes is achieved. (10 marks)
- b) Describe Alpha and Beta pleated sheet as examples of secondary structure in fibrous proteins. (10 marks)

Question 6.0.

- a) Distinguish between Classical conditioning and Operant conditioning as forms of associative learning. (05 marks)
- b) Describe the different types of social interactions among two or more animals. (15 marks)

