

TEST CODE **01207042**

FORM TP 2007004

JANUARY 2007

CARIBBEAN EXAMINATIONS COUNCIL

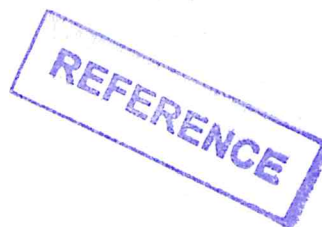
**SECONDARY EDUCATION CERTIFICATE
EXAMINATION**

BIOLOGY

Paper 04/2 – Alternative to SBA

General Proficiency

2 hours



In addition to the 2 hours, candidates are allowed 10 minutes in order to read through the entire paper. Writing may begin during the 10-minute period.

READ THE FOLLOWING DIRECTIONS CAREFULLY

- 1. Answer ALL questions.**
- 2. Use this answer booklet when responding to the questions. For EACH question, write your answer in the space provided and return the answer booklet at the end of the examination.**

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

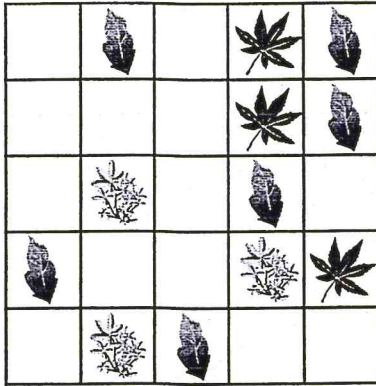
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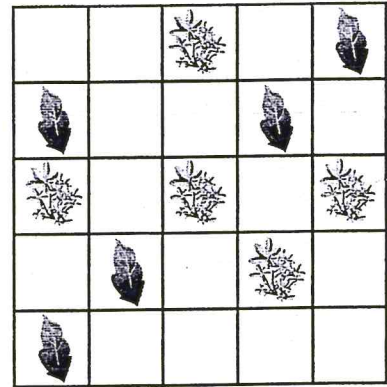
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You should NOT spend more than 30 minutes on Question 1.

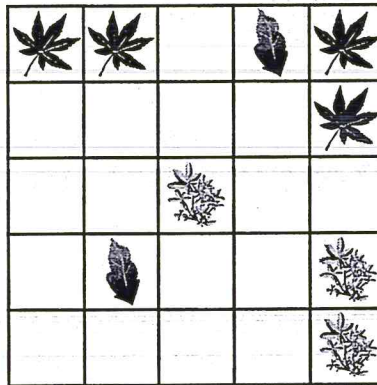
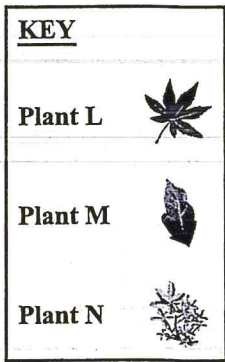
1. Figure 1 below represents 5 quadrats of the result of an ecological study conducted by students in an ecology club. Only 1m² quadrats were used in the study.



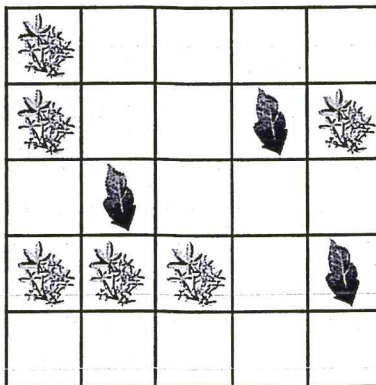
QUADRAT 1



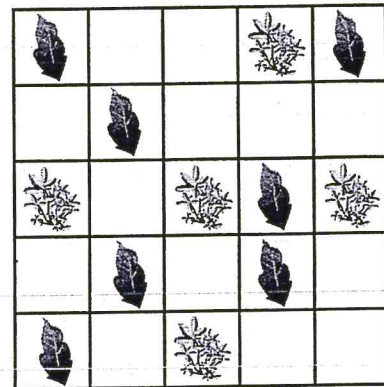
QUADRAT 2



QUADRAT 3



QUADRAT 4



QUADRAT 5

Figure 1. Results of an ecological study

GO ON TO THE NEXT PAGE

(a) Using information from the quadrats, make a table to show the results for the three plants.

(7 marks)

(b) Calculate the density for plant M. Show your working.

(2 marks)

(c) Describe in detail how the quadrat was used to obtain the data displayed in Figure 1.

(4 marks)

(d) Explain how the data collected using the quadrats could be used to determine the distribution of the three plants on the entire lawn.

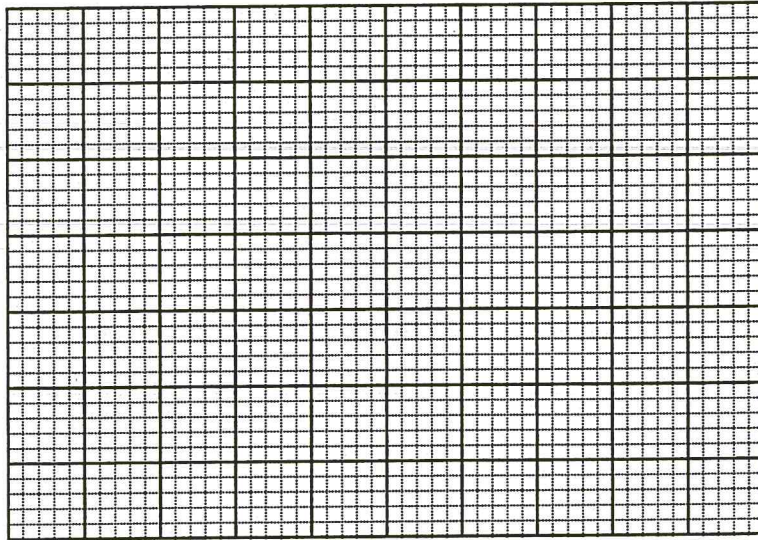
(2 marks)

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(e) Could the same method be used to study the distribution of animals? Explain your answer.

(2 marks)

(f) In another field study the students counted 5 earthworms, 8 beetles, 35 ants, 3 lizards and 23 woodlice.
Represent these findings as a bar graph on the grid below.



(2 marks)

(g) Name TWO OTHER ways of representing the number of animals found.

(2 marks)

Total 21 marks

GO ON TO THE NEXT PAGE

2. (a) (i) Carry out the following instructions and then answer the questions below.

- Use a piece of tissue to clean off the mirror carefully.
- Take a deep breath and breathe out slowly, through your mouth, on to the surface of the mirror.
- Record your observations.

Observations:

(1 mark)

(ii) Describe a test to identify the substance on the mirror.

(2 marks)

(iii) Based on your observations, what conclusion can be made about the difference between inhaled and exhaled air?

(1 mark)

(iv) Does the investigation have a control? Give a reason for your answer.

(2 marks)

GO ON TO THE NEXT PAGE

- (b) Figure 2 below shows a student carrying out an investigation into another difference between inhaled and exhaled air.

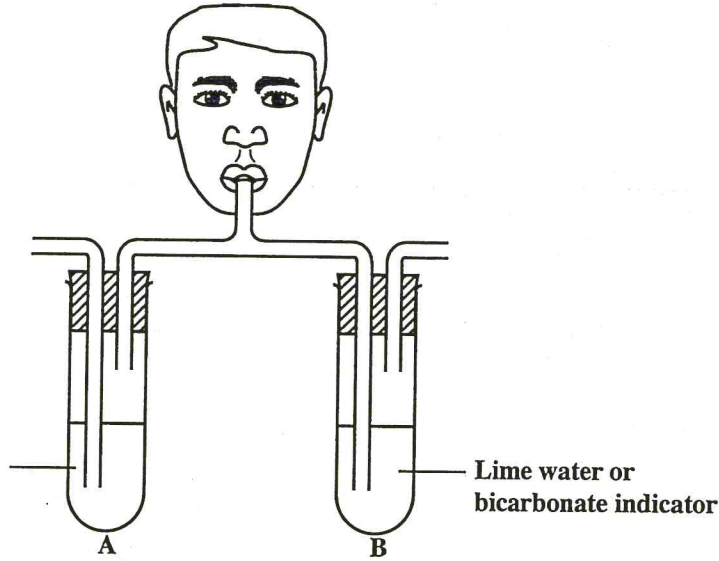


Figure 2. Investigation into difference between inhaled and exhaled air

- (i) Label the contents of flask A. (1 mark)
-
- (ii) Use arrows on Figure 2 to show the direction of the flow of air when the student inhales. (2 marks)
-
- (iii) What is the aim of this experiment?
- _____
- _____
- (2 marks)
- (iv) State TWO precautions that the student should take in setting up this apparatus.
- _____
- _____
- (2 marks)
- (v) What changes would be seen in Flask B after the student exhales for the first 2 seconds? _____ (1 mark)
- 30 seconds? _____ (1 mark)

GO ON TO THE NEXT PAGE

- (vi) If you held your breath for a minute before breathing out into the apparatus, how might this affect the results? Give ONE reason for your answer.

(2 marks)

- (vii) Your teacher has asked you to describe to a student who was absent, how to use the apparatus and materials shown in Figure 2 to carry out the investigation. Write down the instructions you would give to her.

(3 marks)

Total 20 marks

3. (i) Using the mirror with which you are provided, draw a diagram of your incisors (front teeth) in the space below.

(8 marks)

GO ON TO THE NEXT PAGE

(ii) What are the features of the incisor you observed in the mirror?

(3 marks)

(iii) State TWO differences you observed between your incisor and any other two types of teeth which you can see in your mouth.

(4 marks)

(iv) Explain how the differences you observed about your teeth can help you to choose your diet.

(4 marks)

Total 19 marks

END OF TEST