



CARIBBEAN EXAMINATIONS COUNCIL

SECONDARY EDUCATION CERTIFICATE
EXAMINATION

BIOLOGY

Paper 03/2 – Alternative to SBA

General Proficiency

2 hours

SANGRE GRANDE
SECONDARY SCHOOL
LIBRARY

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

1. In an investigation carried out by a group of Biology students on the school's playing field, the estimated numbers of various organisms were determined as shown in Table 1.

TABLE 1: ESTIMATES OF NUMBER OF ORGANISMS FOUND IN THE SCHOOL'S PLAYING FIELD

Organism	Number	Organism	Number
Earthworm	300	Grass	(Numerous)
Snail	90	Unknown flowering shrub	16
Slug	105	Iguana	7
Millipede	120	Grasshopper	90
Lizard	10	Mango tree	1
Butterfly	24	Kiskeedee (bird)	10
Ant	500	Toad	15
Humming bird	20	Leaf litter	(large amounts)

- (a) Identify the **THREE** methods that were most likely used in the investigation to collect the data shown in Table 1.

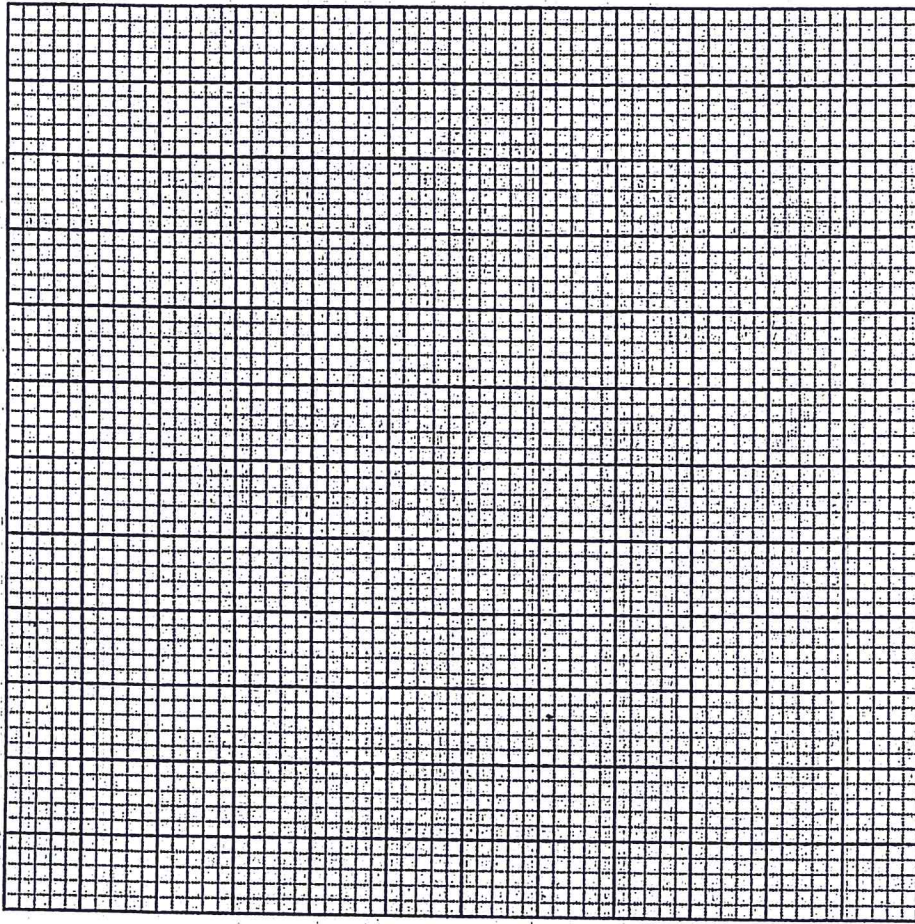
(3 marks)

- (b) Explain how any **TWO** methods you identified at (a) were likely used in collecting the information.

(4 marks)

- (c) On the grid on page 3, construct a bar chart to show the relative population sizes of the following organisms found in the playing field: earthworm, snail, slug, millipede, iguana, kiskeedee.

(6 marks)



(d) Which of the organisms listed at (c) on page 2 are likely to be at the same trophic level? Explain your answer.

(3 marks)

(e) Explain why a pyramid of numbers may NOT be adequate to show the feeding relationships between the tree and the organisms it supports.

(2 marks)

Total 18 marks

2. A student set up the experiment as shown in Figure 1 to investigate movement of water in plant tissue.

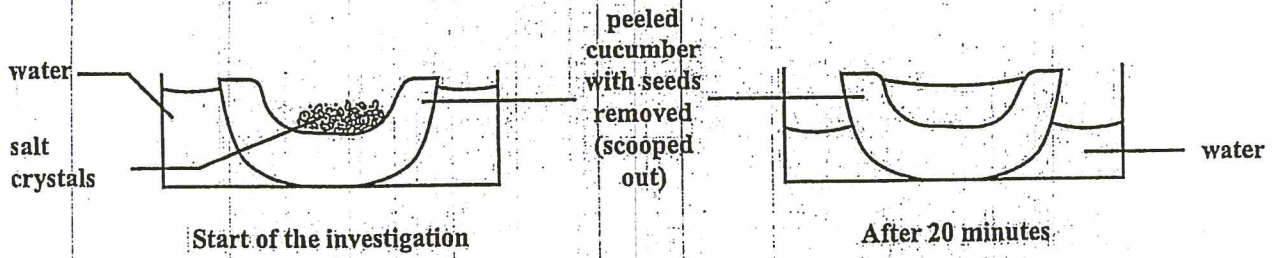


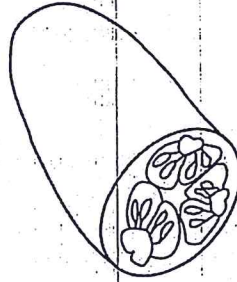
Figure 1. Apparatus set up for an investigation

- (a) (i) State an aim for the investigation illustrated in Figure 1.
-
-
- (2 marks)
- (ii) Explain the results of the investigation after 20 minutes, as shown in Figure 1.
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-
-
-
- (3 marks)
- (iii) Identify TWO precautions that should be taken in carrying out the investigation.
-
-
- (2 marks)
- (iv) Describe how you would set up a control for the investigation.
-
-
-
- (2 marks)

(v) How would the control confirm the results of the investigation?

(2 marks)

(b) You are provided with a diagram of half of a cucumber, similar to that used in the investigation in (a) of this question.



In the space provided below make a drawing of the cucumber as it would be seen in cross-section.

(6 marks)

(c) In an investigation to show the amount of water taken up by a plant the following apparatus and materials were used, as illustrated in Figure 2.

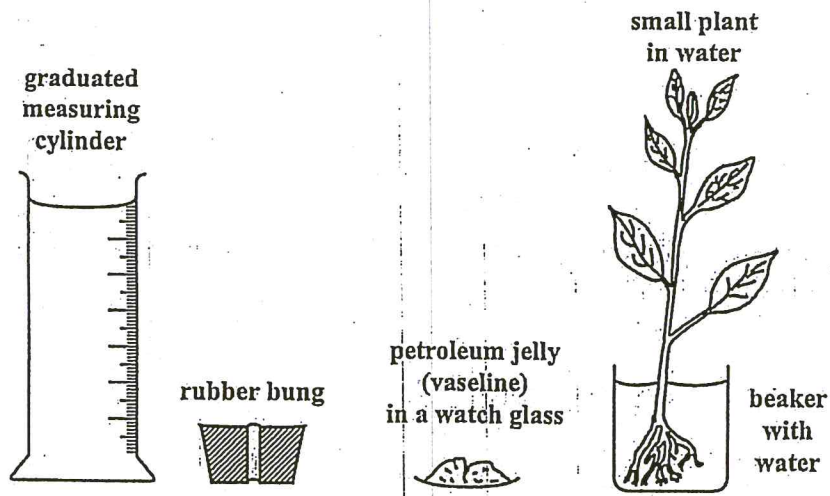
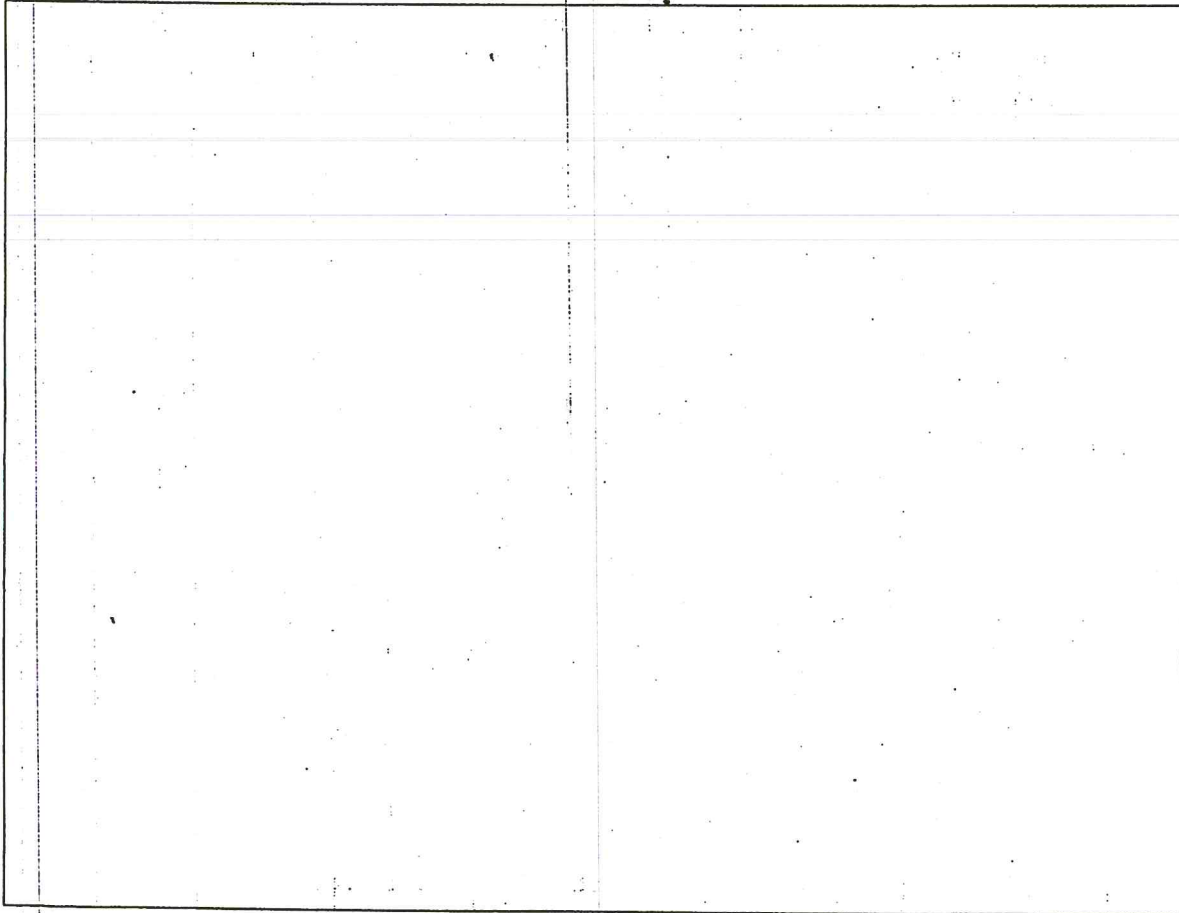


Figure 2. Apparatus and materials used to show water uptake in a plant

(i) In the space provided below, draw the assembled apparatus and materials to show how they were set up for the investigation.



(4 marks)

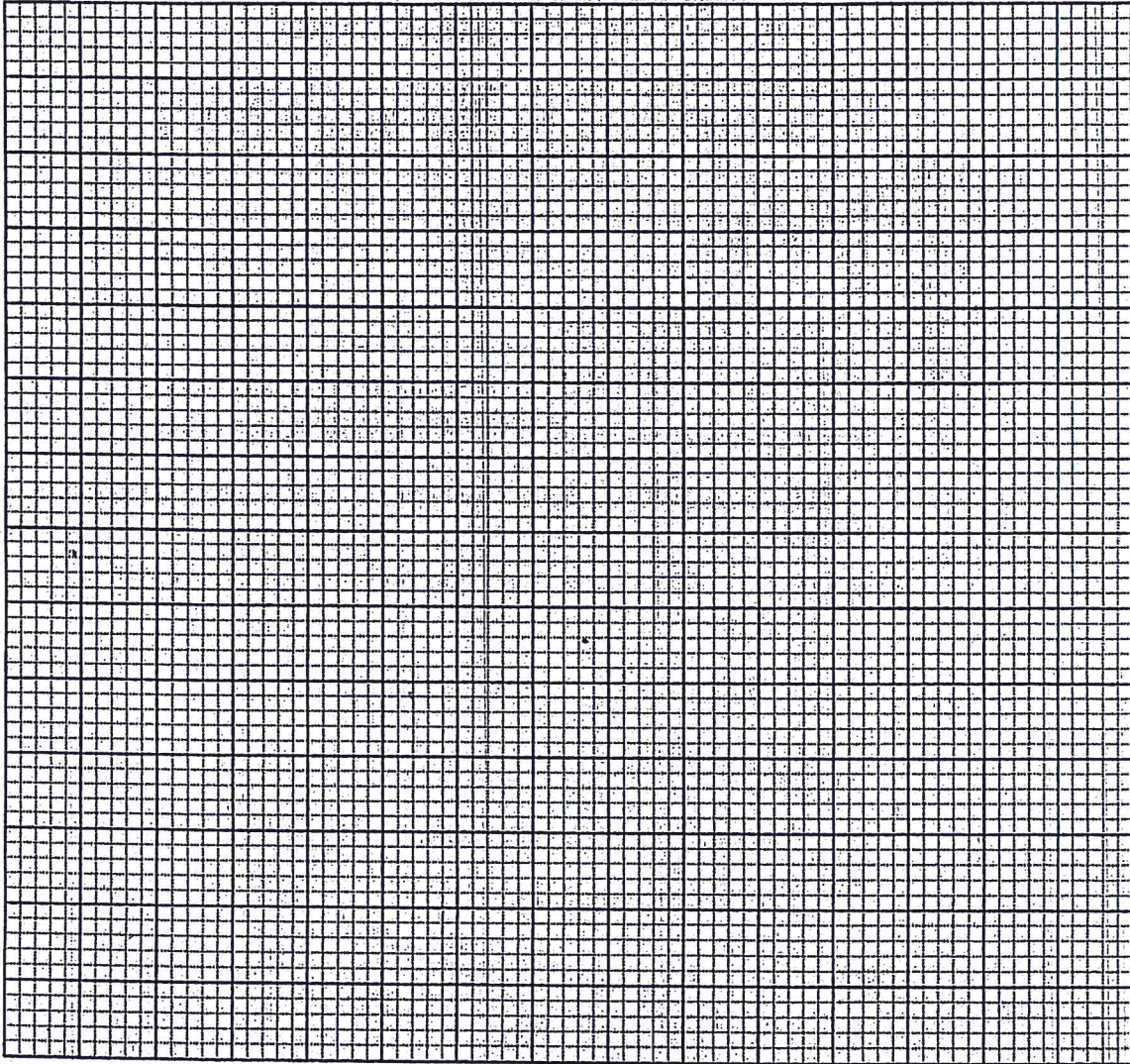
3. Table 2 shows some data for the incidence of AIDS in the Caribbean.

TABLE 2: NUMBER OF REPORTED AIDS CASES IN CERTAIN CARIBBEAN COUNTRIES BETWEEN 1982 AND 2000

Year	Number of females	Number of males	Total number of cases reported
1982	0	0	0
1984	0	5	5
1986	0	200	200
1988	26	494	520
1990	75	675	750
1992	150	850	1000
1994	260	1040	1300
1996	425	1275	1700
1998	660	1540	2200
2000	890	1810	2700

GO ON TO THE NEXT PAGE

- (a) (i) On the grid below, plot a graph of the data given in Table 2. (6 marks)



- (ii) From the information provided in the table and graph, draw ONE conclusion about the incidence of AIDS in Caribbean populations during the period 1982 to 2000.

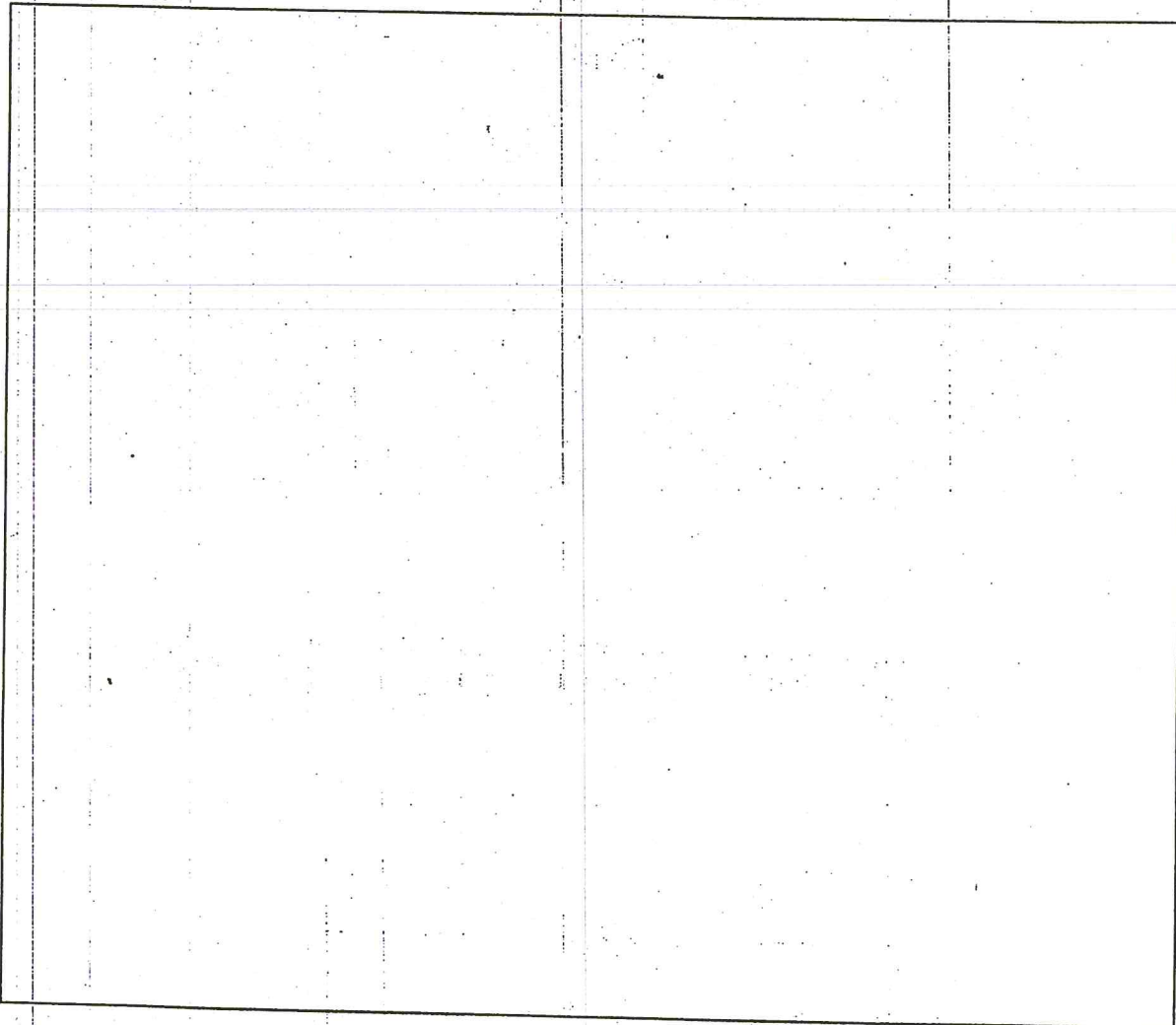
(3 marks)

- (b) Table 3 gives the methods of transmission in reported AIDS cases in Caribbean countries during the 1982 to 2000 period.

TABLE 3: METHODS OF TRANSMISSION IN REPORTED AIDS CASES DURING THE PERIOD 1982 TO 2000

Transmission Methods	Percentage Population (%)
Birth	6
Blood transfusion	0.3
Intravenous devices	1.5
Unknown	17
Sexual intercourse (homosexual)	11
Sexual intercourse (heterosexual)	64
Other	0.2

- (i) In the space provided below, construct a pie chart to illustrate the data in Table 3. (6 marks)



- (ii) Suggest ONE social implication of the data presented in Table 3 and the pie chart.

(2 marks)

Total 17 marks

END OF TEST

INSTRUCTIONS TO CANDIDATE:

1. Fill in all the information requested clearly and legibly.

TEST CODE

SUBJECT: _____

PROFICIENCY: _____

FULL NAME: _____

(BLOCK LETTERS)

Signature: _____

Date: _____

2. Ensure that this slip is detached by the Supervisor or Invigilator and given to you when you hand in this booklet.
3. Keep it in a safe place until you have received your results.

INSTRUCTION TO SUPERVISOR/INVIGILATOR:

Sign the declaration below, detach this slip and hand it to the candidate as his/her receipt for this booklet collected by you.

I hereby acknowledge receipt of the candidate's booklet for the examination stated above.

Signature: _____

Supervisor/Invigilator:

Date: _____