

FORM TP 2020002



TEST CODE **01207020**

JANUARY 2020

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE®

EXAMINATION

BIOLOGY

Paper 02 – General Proficiency

2 hours 30 minutes

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. This paper consists of SIX questions in two sections. Answer ALL questions.
2. Write your answers in the spaces provided in this booklet.
3. DO NOT write in the margins.
4. Where appropriate, answers should be illustrated by diagrams.
5. If you need to rewrite any answer and there is not enough space to do so on the original page, you must use the extra lined page(s) provided at the back of this booklet. **Remember to draw a line through your original answer.**
6. **If you use the extra page(s), you MUST write the question number clearly in the box provided at the top of the extra page(s) and, where relevant, include the question part beside the answer.**

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SECTION A

Answer ALL questions.

Write your answers in the spaces provided in this booklet.

- 1.** (a) (i) Briefly describe the process of transpiration in plants. Your description must include the names of TWO of the organs involved in transpiration.

(4 marks)

2. (ii) An experiment was carried out to determine the effect of relative humidity (RH) on the rate of transpiration. The results are presented in Table 1. Use the grid on page 5 to draw a graph of the results.

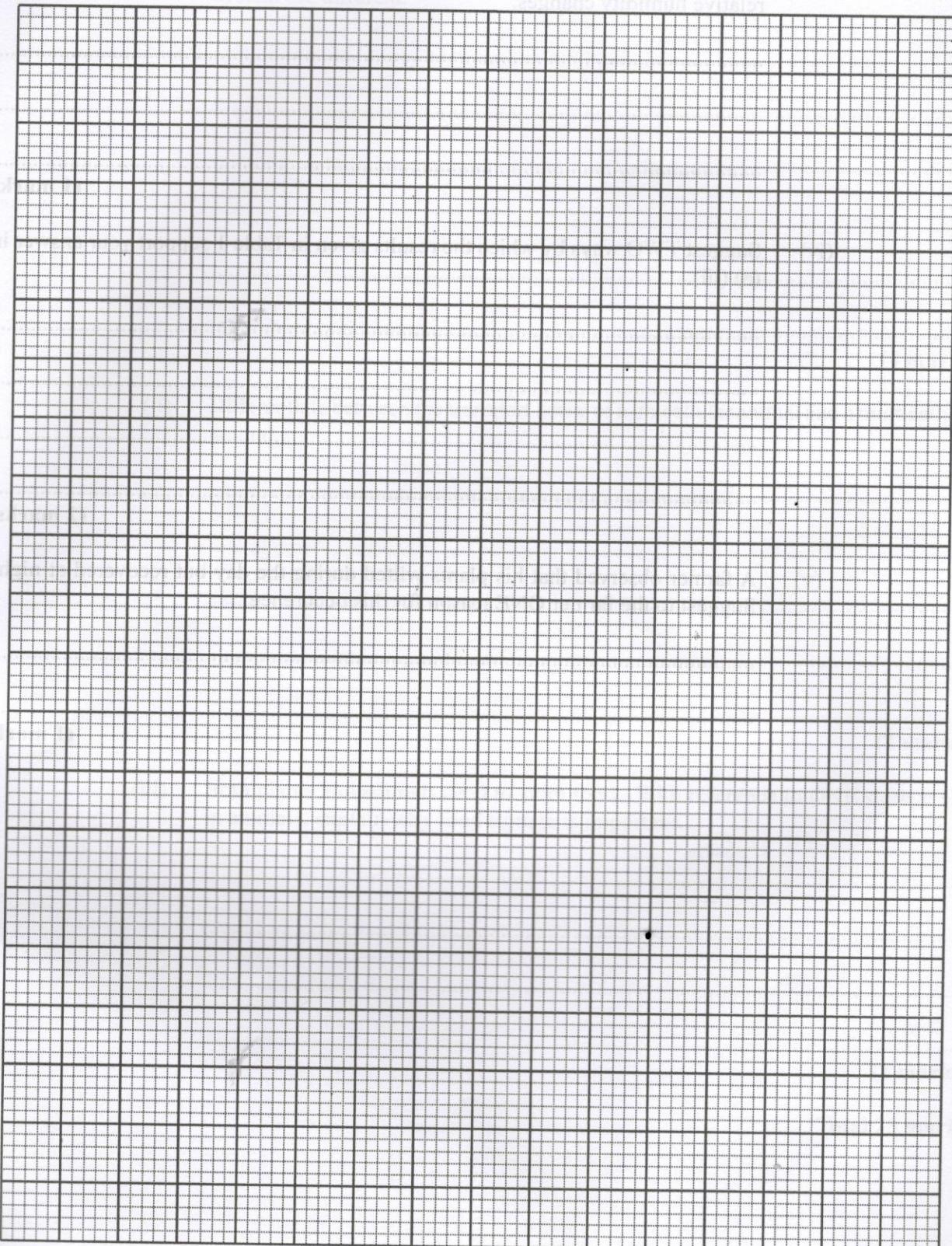
TABLE 1: THE EFFECT OF RELATIVE HUMIDITY ON THE RATE OF TRANSPIRATION

Relative Humidity (%)	Rate of Transpiration (mg/cm ² /h)
10	25
20	25
30	25
40	20
50	15
60	12
70	10
80	8
90	5
100	5

(9 marks)



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- 1 (iii) Using the results from Table 1, state how the rate of transpiration changes as the relative humidity changes.

.....
.....
.....

(1 mark)

- 2 (iv) Suggest TWO ways by which the results given in Table 1 support your answer in (a) (iii).

.....
.....
.....
.....

(2 marks)

- 3 (v) A farmer observed that his plants wilted during the day but recovered at night. Suggest to the farmer ONE reason for this occurrence.

.....
.....

(1 mark)

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(b) (i) Suggest TWO ways in which the animal transport system and the plant transport system are different.



(4 marks)

(ii) Differentiate between the transport needs of a unicellular animal and a multicellular animal.

How many books do you have? _____

(2 marks)

(iii) Both plants and animals need to store food. With reference to ONE storage site in animals, explain why food storage is important.

(2 marks)

Total 25 marks

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2. (a) (i) Figure 1 shows the internal structures of a generalized plant cell.

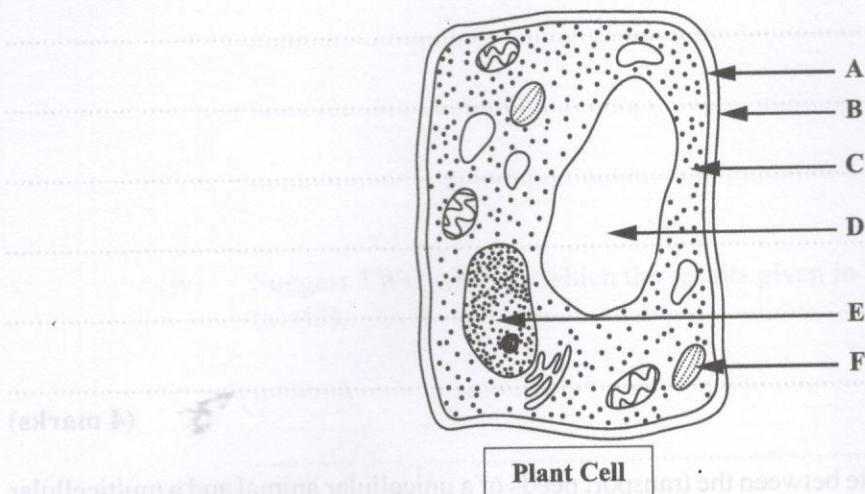


Figure 1. Diagram of the internal structures of a generalized plant cell

Name EACH of the structures labelled A, B, C, D, E and F.

- A
B
C
D
E
F (6 mark)



0 1 2 0 7 0 2 0 0 8



- (ii) Differentiate between plant cells and animal cells by identifying TWO differences. Explain how EACH difference is important to the plant's existence.

(4 marks)

- (b) (i) State the expected observation if EACH of the cell types (plant cell and animal cell) was placed in distilled water for 15 minutes. Suggest ONE reason for EACH observation.

Plant cell

Observation

Reason

(2 marks)

Animal cell

Observation

Reason

(2 marks)

- (ii) Name the process which is responsible for the observation in (b) (i).

(1 mark)

Total 15 marks

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3. Figure 2 shows a boy reading a book under a tree while his friends play in the distance.

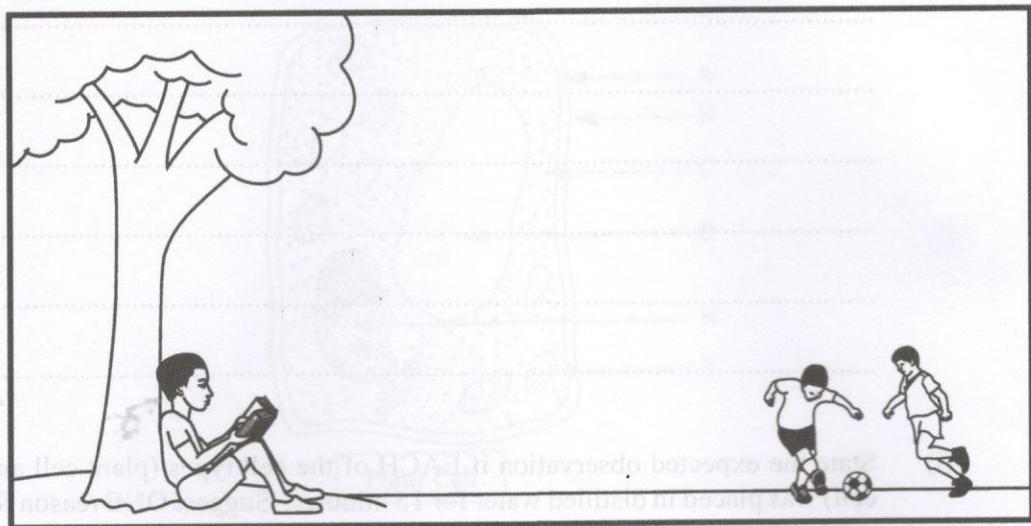


Figure 2. Diagram of boy reading a book with his friends playing in the distance

- (a) Describe the process by which the structure of the boy's eye will allow him to
(i) read the book

(a) (i)

(a) (i)

(a) (i)

(3 marks)

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(ii) observe his friends playing in the distance.

(3 marks)

(b) (i) Name the type of corrective lens which would help the boy see distant objects clearly if he is nearsighted.

(1 mark)

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- 1 (ii) John is nearsighted but his sister Mary has normal vision. What would cause John's sight to be different from Mary's?

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(2 marks)

- 2 (iii) How would wearing corrective lenses/glasses allow John to see objects as clearly as Mary?

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.....

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(2 marks)

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- (c) Explain why the appearance of the boy's eyes while seated under the shade of the tree would be different if he is seated in the sun.



(4 marks)

Total 15 marks

(4 marks)



SECTION B (2 marks)

Answer ALL questions.

Write your answers in the spaces provided in this booklet.

4. Figure 3 is a simplified diagram of the carbon cycle.

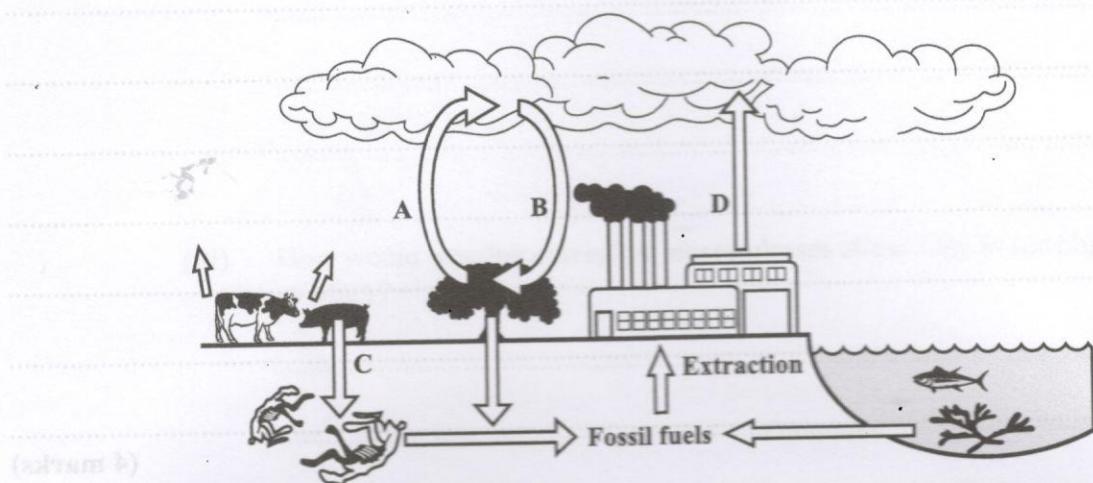


Figure 3. The carbon cycle

2.

- (a) Name the processes labelled A, B, C and D.

A

B

C

D

(4 marks)



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(c) Suggest THREE practices that can be adopted to reduce the impact of human activity on the carbon cycle.

Write your answer in the box below. Your answer will be checked.

2

3

(3 man)

(d) Human activities can lead to an increase in greenhouse gases. Name TWO greenhouse gases other than carbon dioxide.

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cc

(2 mar

Total 15 min



5. (a) Complete the following table to compare the diseases hypertension and yellow fever for each characteristic given.

TABLE 2: COMPARISON OF HYPERTENSION AND YELLOW FEVER

Characteristic	Disease	
	Hypertension	Yellow Fever
Disease category
	(1)	(1)
Disease cause
	(1)	(1)
One sign/symptom of the disease
	(1)	(1)

(6 marks)

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(b) Explain how vaccination works to prevent persons from becoming ill with yellow fever.

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(c) Discuss THREE strategies that can be used by hypertensive patients to control their signs/symptoms.

Total 15 marks



6. (a) Describe how the human skin helps the body to keep cool on a hot, sunny day.

(6 marks)



(b) State ONE similarity and ONE difference between human beings and invertebrates in the ways they cool their bodies on hot days.

(3 marks)

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(c) Persons with the inherited condition albinism do not produce the pigment (melanin) that gives the skin its dark colour.

- (i) Using the symbols A to represent a normal allele and a to represent the albino allele, draw a genetic diagram to illustrate how two heterozygous parents could produce an albino child.

(elham 8)

- (ii) Identify the genotype of the albino child.

.....

- (iii) State the probability of the albino child being produced.

.....

(6 marks)

Total 15 marks

END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.

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