

FORM TP 2018002



TEST CODE 01207020

JANUARY 2018

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.**

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

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SECTION A

Answer ALL questions.

Write your answers in the spaces provided in this booklet.

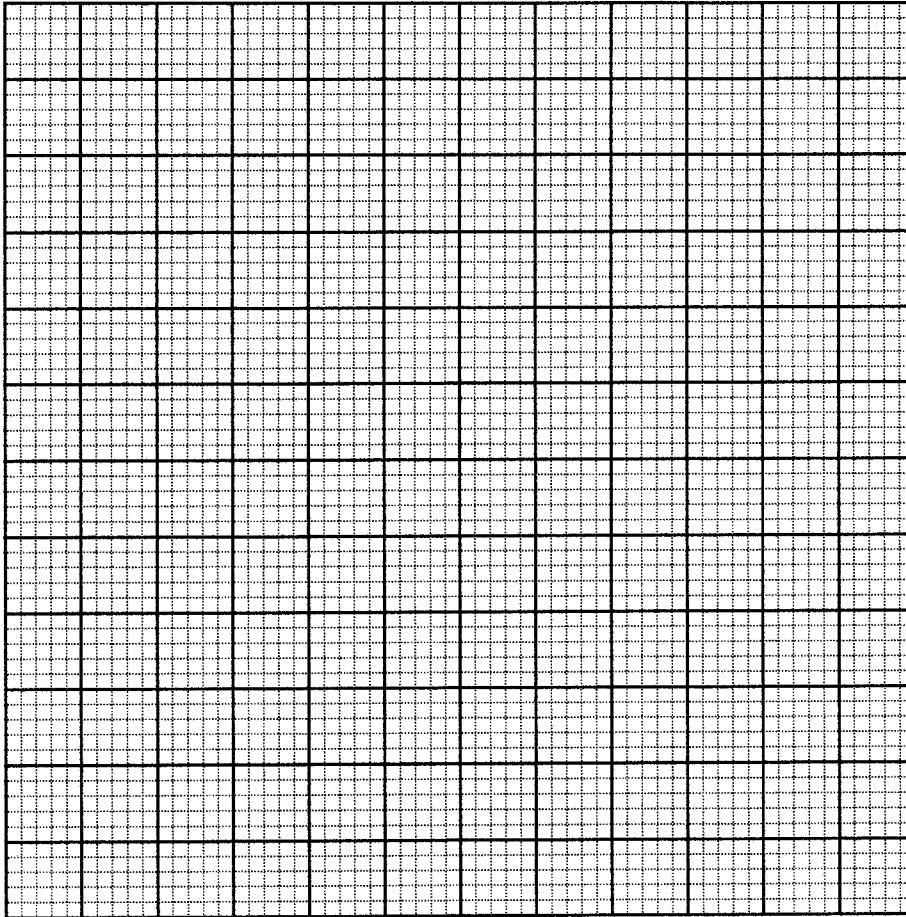
1. Table 1 shows data obtained from a tree study done by ecology students.

TABLE 1: ORGANISMS FOUND ON A TREE

Name of Organism	Number
Ant	50
Spider	8
Lizard	6
Egret	2
Caterpillar	20
Wild pine	2
Tree frog	3

- (a) Plot the data from Table 1 on the grid provided on page 5.





(5 marks)

- (b) Name and outline TWO possible sampling methods that the students may have used to collect the data shown in Table 1.

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(4 marks)

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(c) Select from Table 1, ONE organism which belongs to EACH of the following taxonomic groups:

Arthropod

Reptile

Bird

Amphibian

(4 marks)

(d) Explain how the method of nutrition used by the wild pine differs from the method of nutrition used by the other organisms in the table.

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(2 marks)



- (e) (i) Name and describe the type of relationship that exists between the wild pine and the tree.

Type of relationship:

Description:

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(2 marks)

- (ii) One student observes an orange-yellow vine growing on one portion of the tree where the leaves are dying. How does the relationship between this vine and the tree differ from the relationship described in (e) (i) above?

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(2 marks)

- (iii) State TWO reasons why the vine causes the leaves of the tree to die.

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(2 marks)

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2. (a) Complete Table 2 by listing the final digestive products of the three macronutrients.

TABLE 2: MACRONUTRIENTS AND FINAL PRODUCTS OF DIGESTION

Macronutrient	Final Product of Digestion
Carbohydrate	
Protein	
Fat	

(3 marks)

- (b) Outline how the final products of the digestion of protein and fat are transported from the gut to the liver.

Protein

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Fat

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(2 marks)

GO ON TO THE NEXT PAGE



(c) The pancreas plays an important role in the digestion of food and the homeostatic control of blood sugar levels.

(i) Explain the role of the pancreas in the digestion of food.

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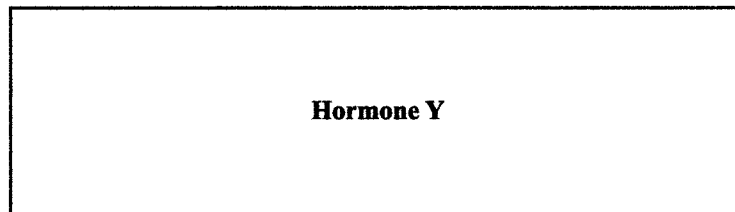
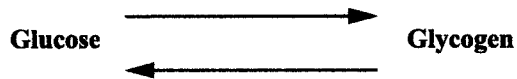
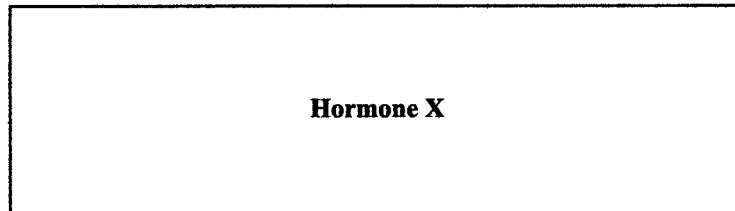
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(3 marks)

(ii) The line diagram below summarizes the role of the pancreatic hormones in the control of blood glucose levels. Complete the diagram by filling in the boxes with the names of Hormones X and Y.



(2 marks)



(d) Explain the role of the liver in the homeostatic control of blood glucose levels.

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(2 marks)

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- (e) Figure 1 shows the variation in blood glucose concentration for two persons, A and B, during the course of 48 hours. Use the information in Figure 1 to answer the questions that follow.

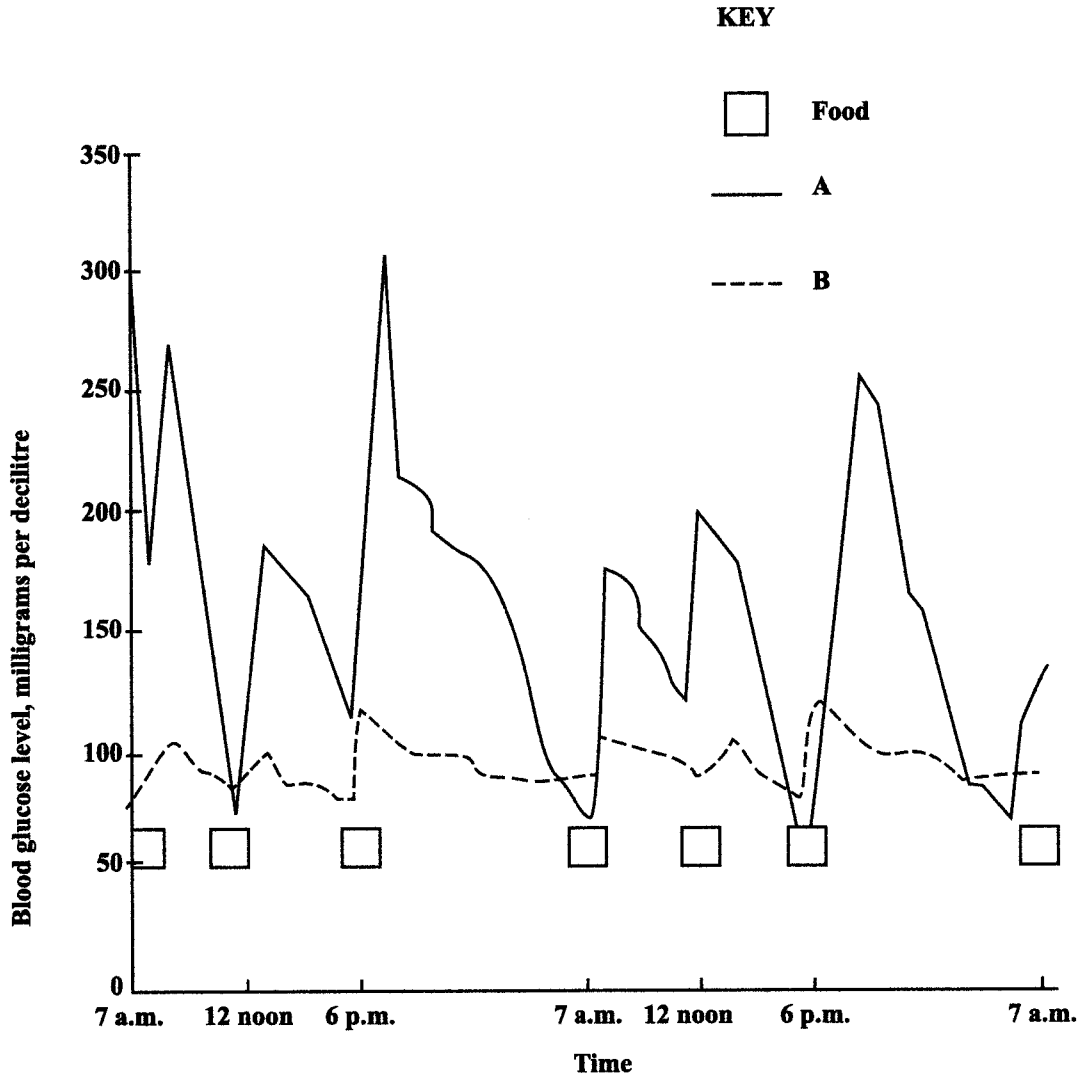


Figure 1. Variation in blood glucose concentration over 48 hours

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- (i) Which person is MOST likely suffering from diabetes mellitus? Give ONE reason for your answer.

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(2 marks)

- (ii) Based on the data in Figure 1, suggest the range for blood glucose concentration in a healthy person.

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(1 mark)

Total 15 marks



3. Figure 2 is a diagram of an enlarged section of the human lung.

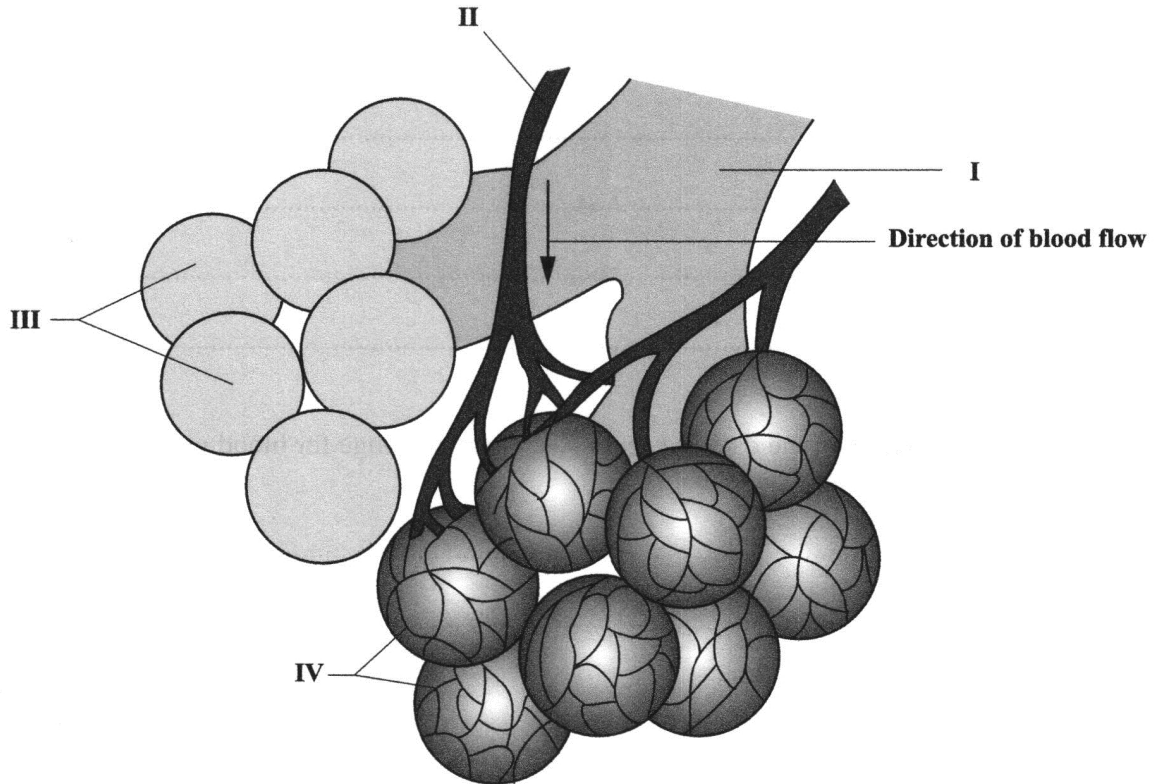


Figure 2. Enlarged section of human lung

(a) (i) Name the structures labelled I, II, III and IV in Figure 2.

- I
- II
- III
- IV

(4 marks)

(ii) State the function of EACH of the parts labelled II and IV in Figure 2.

- II
-
- IV
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(2 marks)

GO ON TO THE NEXT PAGE



(b) Cigarette smoking is a public health concern because cigarette smoke contains chemicals that can destroy lung tissue.

(i) State TWO ways in which the appearance of the lung of a smoker differs from that of a non-smoker.

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(2 marks)

(ii) Suggest TWO benefits of placing a ban on the smoking of cigarettes in public places.

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(2 marks)

(iii) Name the addictive component in cigarettes and suggest ONE negative impact of drug addiction.

Addictive component

Negative impact

(2 marks)

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(c) The alveolus has a function similar to that of a dicotyledonous leaf.

State THREE ways by which a dicotyledonous leaf is adapted to carry out this function.

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(3 marks)

Total 15 marks



SECTION B

Answer ALL questions.

Write your answers in the spaces provided in this booklet.

4. (a) With the aid of a diagram of a reflex arc, describe the response of an individual whose skin suddenly comes into contact with a hot surface.

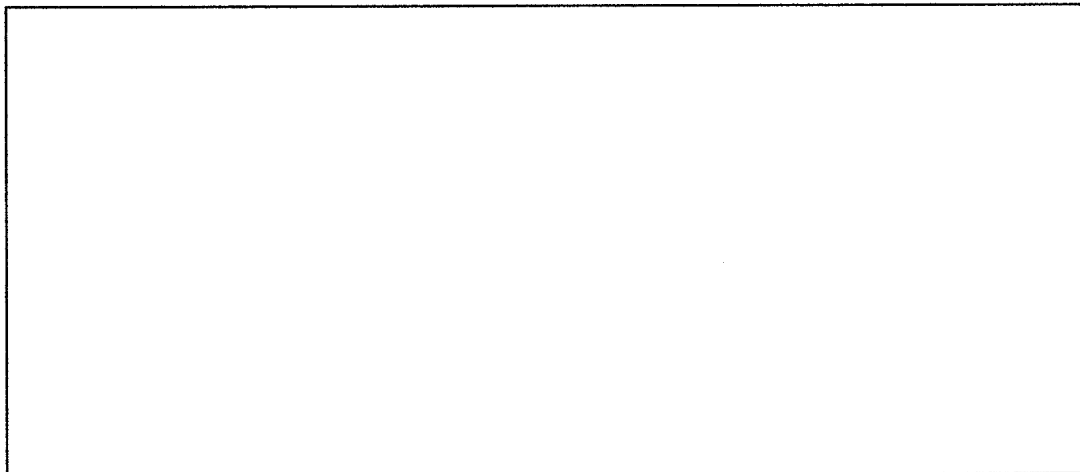


Diagram of a reflex arc

Description

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(6 marks)

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- (c) Scientists predict that global temperatures will continue to rise over the next decade. State TWO factors that have contributed to rising global temperatures, and state TWO negative effect of rising global temperatures on biological diversity in the Caribbean.

Factors:

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Negative effects:

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(4 marks)

Total 15 marks

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5. (a) Name THREE types of diseases and state ONE example of EACH type of disease.

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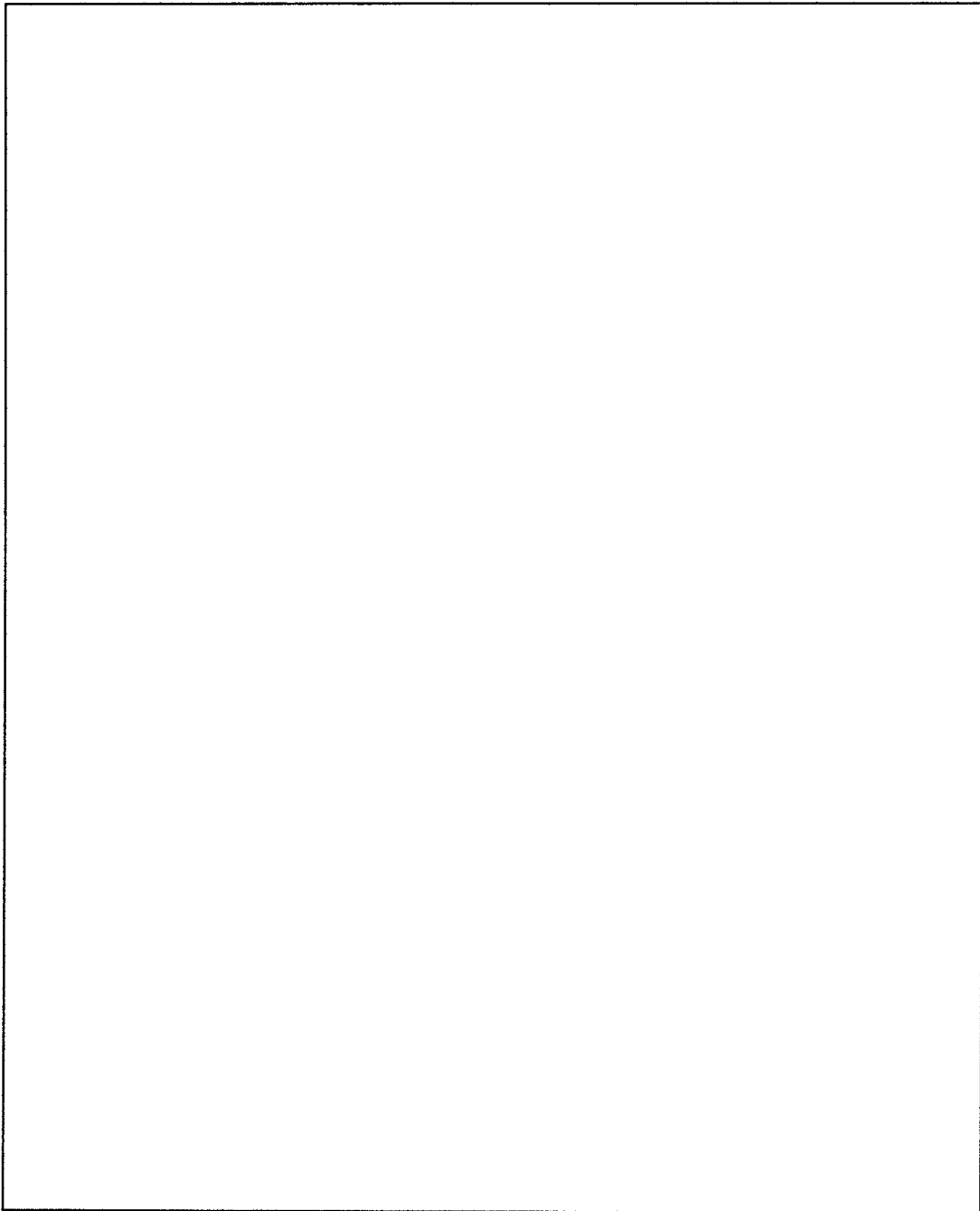
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(6 marks)



- (c) Both parents of a haemophiliac child have the normal blood clotting trait. Use a genetic diagram to explain how this child could inherit the trait for haemophilia.



(9 marks)

Total 15 marks

END OF TEST

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

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