

FORM TP 2014082



TEST CODE **01253020**

MAY/JUNE 2014

**C A R I B B E A N   E X A M I N A T I O N S   C O U N C I L**

**C A R I B B E A N   S E C O N D A R Y   E D U C A T I O N   C E R T I F I C A T E<sup>®</sup>  
E X A M I N A T I O N**

**HUMAN AND SOCIAL BIOLOGY**

**Paper 02 – General Proficiency**

*2 hours*

**READ THE FOLLOWING INSTRUCTIONS CAREFULLY.**

1. This paper consists of SIX questions in TWO sections.
2. Write your answers in the spaces provided in this booklet.
3. **DO NOT** write in the margins.
4. Each question is worth 15 marks.
5. If you need to re-write any answer and there is not enough space to do so on the original page, you must request extra lined pages from the invigilator. **Remember to draw a line through your original answer and correctly number your new answer in the box provided.**
6. **If you use extra pages you MUST write your registration number and question number clearly in the boxes provided at the top of EVERY extra page.**

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

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**SECTION A**

**Answer ALL questions in this section.**

**Write your answers in the spaces provided in this booklet.**

1. Human Immunodeficiency Virus (HIV) is commonly transmitted via unprotected sex with an infected person.

(a) Suggest TWO other ways by which HIV is transmitted.

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.....

**(2 marks)**

(b) Acquired Immune Deficiency Syndrome (AIDS) is caused by a human immunodeficiency virus. This virus affects some cells of the circulatory system.

(i) Name the cell that is specifically targeted and destroyed by the human immunodeficiency virus.

.....

**(1 mark)**

(ii) State TWO signs or symptoms of AIDS.

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.....

**(2 marks)**

(c) Both gonorrhoea and syphilis are transmitted via unprotected sex with an infected person. Why are these diseases referred to as venereal and AIDS is NOT referred to as venereal?

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**(1 mark)**

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- (d) Table 1 shows the estimated prevalence of HIV, and the deaths due to AIDS within the Caribbean, at the end of 2009.

**TABLE 1: ESTIMATED HIV PREVALENCE AND DEATHS DUE TO AIDS IN THE CARIBBEAN**

Country	Persons Living With HIV/AIDS	Deaths Due to AIDS
The Bahamas	660	50
Barbados	210	12
Cuba	710	15
The Dominican Republic	5 700	230
Haiti	12 000	710
Jamaica	3 200	120
Trinidad and Tobago	1 500	90

- (i) On the grid provided in Figure 1, construct a bar graph of the number of deaths due to AIDS, using the data in Table 1. **(3 marks)**

- (ii) Which country has the HIGHEST number of persons living with HIV/AIDS?

.....  
**(1 mark)**

- (iii) Which country has the LOWEST number of deaths due to AIDS?

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**(1 mark)**

- (iv) The Bahamas and Cuba have almost similar numbers of persons living with HIV/AIDS. However, Cuba has 15 deaths while The Bahamas has 50 deaths due to AIDS.

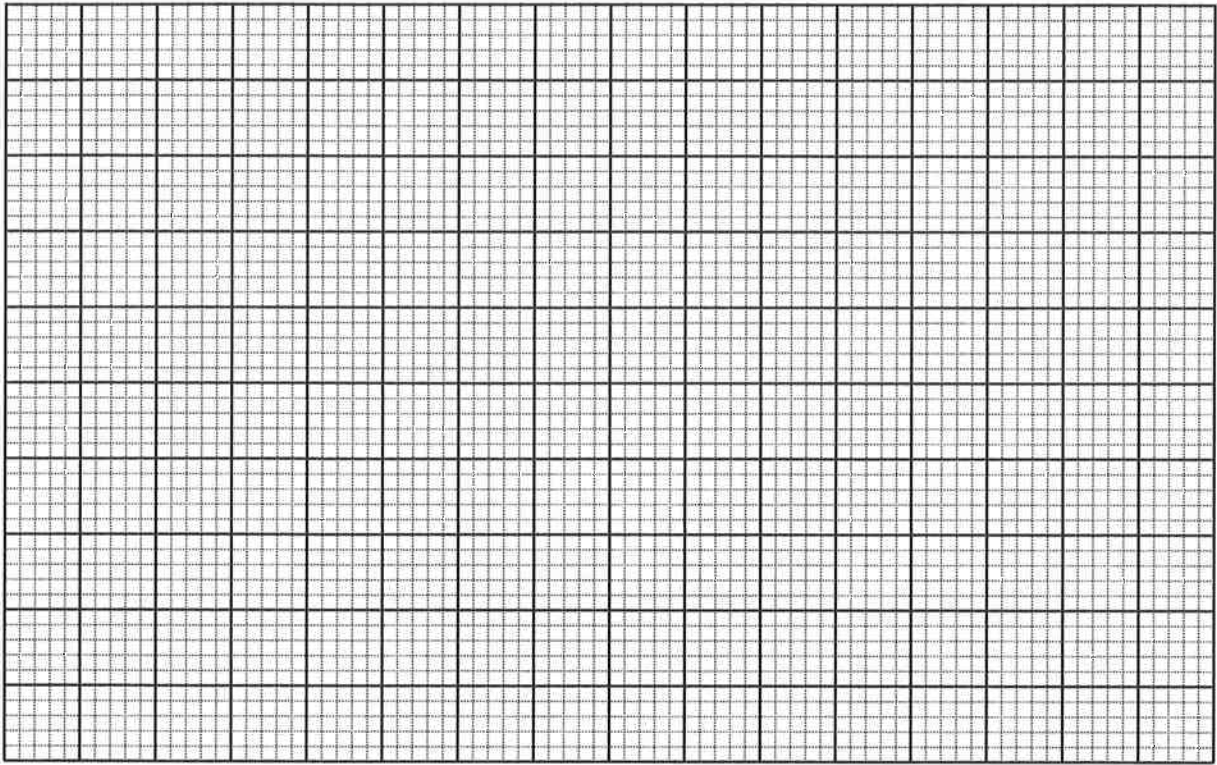
Suggest ONE reason why Cuba has LESS deaths than The Bahamas.

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**(2 marks)**

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**Figure 1. Deaths due to AIDS in some Caribbean countries**

- (e) The economy of some countries depends heavily on tourism. Suggest ONE effect that a high incidence of AIDS would have on these countries.

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**(2 marks)**

**Total 15 marks**



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2. Figure 2 shows a typical plant cell.

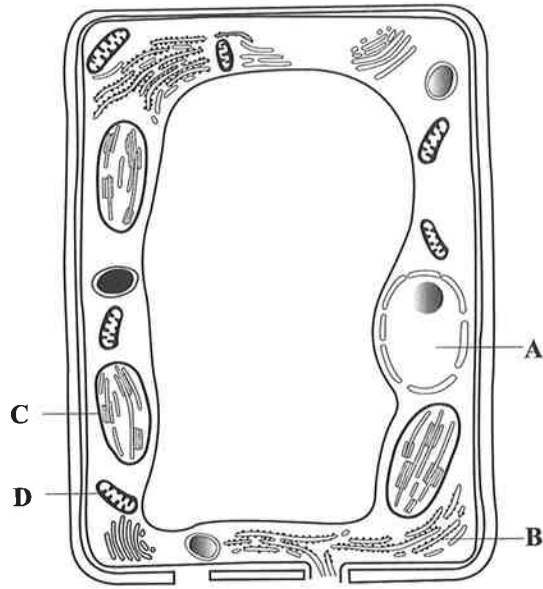


Figure 2. A typical plant cell

(a) (i) Name the organelles labelled A and B in Figure 2.

A .....

B .....

(2 marks)

(ii) State ONE function of EACH of the organelles labelled C and D.

Function of C .....

.....

Function of D .....

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(2 marks)

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(b) You are required to view a virus and a typical plant cell under a microscope.

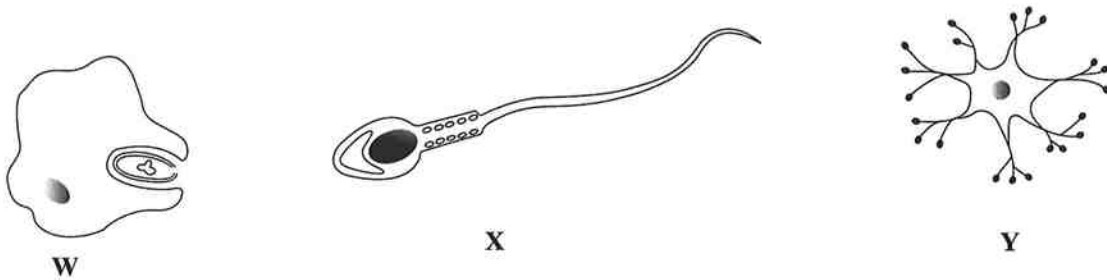
(i) Identify ONE feature that is common to both a virus and a typical plant cell.

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(1 mark)

(ii) Suggest TWO differences that would be observed between the virus and the typical plant cell.

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(2 marks)

(c) Figure 3 shows three different types of cells found in the human body.



**Figure 3. Types of cells found in the human body**

(i) Name the cell labelled Y in Figure 3.

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(1 mark)

(ii) Are the cells in Figure 3 classified as differentiated or undifferentiated?

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(1 mark)



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- (d) Children in a pre-school breathe deeply while running around in a park. They laugh a lot even when they are hurt, and they run to mummy for a snack.

Name THREE characteristics of living organisms that these children illustrate while playing in the park.

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**(3 marks)**

- (e) Bernadette tells Georgiana that a flame is a living organism because it moves, grows and reproduces by sparks. Is Bernadette correct? Explain your answer.

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**(3 marks)**

**Total 15 marks**

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3. (a) Figure 4 shows a diagram of the human alimentary canal.

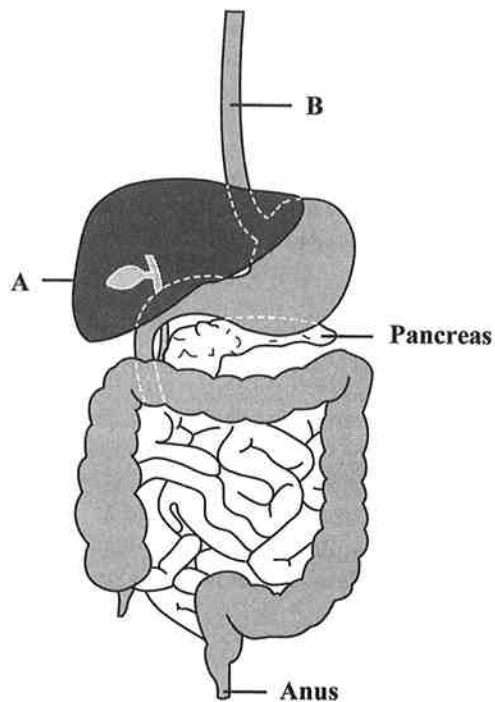


Figure 4. Diagram of the human alimentary canal

Name the structures labelled A and B in Figure 4, and state ONE function of EACH structure.

A .....

Function of A .....

B .....

Function of B .....

(4 marks)





(b) A pancreas becomes diseased and stops producing pancreatic juice.

(i) Name ONE food group whose digestion would be affected.

.....  
(1 mark)

(ii) State ONE effect that a deficiency of the **food group** named in (i) above would have on the human body.

.....  
(1 mark)

(c) Figure 5 shows an experiment used to demonstrate the digestion of starch by amylase.

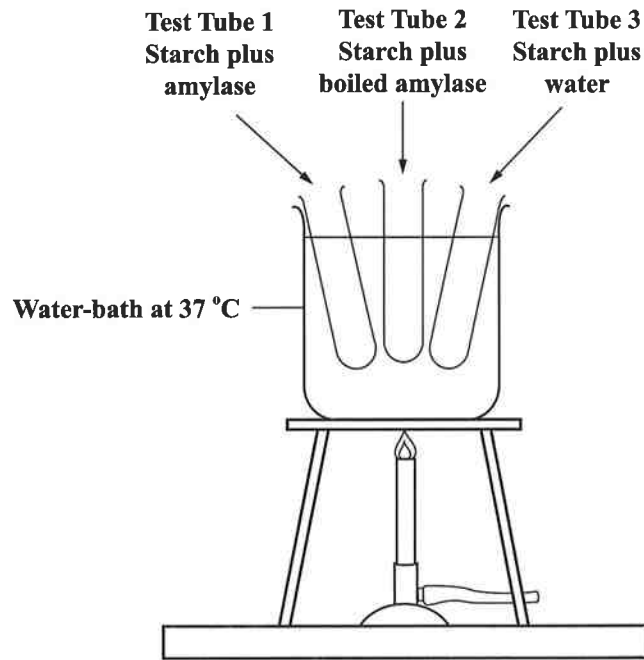


Figure 5. Experiment to demonstrate the digestion of starch by amylase

(i) In which of the three test tubes would the starch be digested?

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(1 mark)



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- (ii) Explain why starch would NOT be digested in the other two test tubes.

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**(4 marks)**

- (d) Veera does not chew her food properly before swallowing it.

- (i) Explain why Veera's way of briefly chewing her food is bad for the digestion of the food.

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**(3 marks)**

- (ii) In which region of the digestive system would the final stage of the digestion of starches occur?

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**(1 mark)**

**Total 15 marks**

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4. (a) Complete the following sentences:

Meiosis is a type of cell division in which the chromosome number is .....

At the end of meiosis in humans, each daughter cell contains ..... chromosomes.  
**(2 marks)**

(b) Both mitosis and meiosis occur in human cells. Meiosis occurs in only one type of cell while mitosis occurs in all other types of cell.

(i) Name the type of cell in which meiosis occurs.

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**(1 mark)**

(ii) State TWO differences between mitosis and meiosis.

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**(2 marks)**

(c) During meiosis, similar chromosomes pair up and exchange genes. During fertilization, the normal chromosome number is attained.

Name a genetic disease that results if the zygote receives an extra chromosome.

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**(1 mark)**



- (d) Nayana is approaching puberty and is curious about the menstrual cycle. Her mother uses the diagram shown in Figure 6 to help her to understand the cycle.

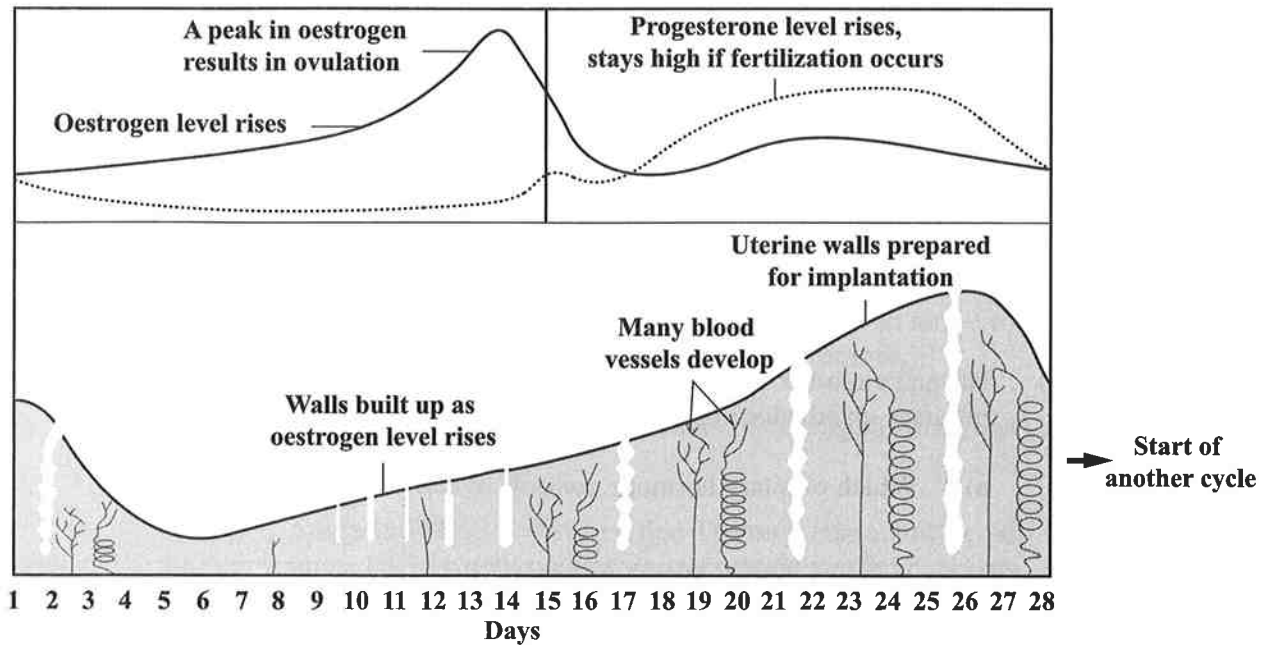


Figure 6. The menstrual cycle in humans

- (i) During which period does menstruation occur?

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(1 mark)

- (ii) What occurs within the **ovary** as the wall of the uterus starts to thicken, and during which days of the cycle does this occur?

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(2 marks)



- (iii) Between days 14 and 28, what is the pattern seen with the ovarian hormonal levels if pregnancy does NOT occur?

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**(4 marks)**

- (iv) Nayana's mother also explains to her that there are hormones produced by her pituitary gland which stimulate her ovaries to produce hormones.

- a) Which pituitary hormone controls ovulation?

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**(1 mark)**

- b) On which day does ovulation occur?

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**(1 mark)**

**Total 15 marks**



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**SECTION B**

**Answer ALL questions in this section.**

**Write your answers in the spaces provided at the end of each question.**

5. (a) (i) Name the mosquito that causes dengue and state TWO symptoms of dengue. **(3 marks)**
- (ii) Explain how a mosquito spreads dengue. **(3 marks)**
- (b) The garbage collectors where Devon lives have been on strike for three weeks and the neighbours are now experiencing vomiting and diarrhoea.
- (i) Explain why these signs of diseases (vomiting and diarrhoea) have spread through the neighbourhood. **(3 marks)**
- (ii) Suggest THREE measures that Devon's community could take to prevent the spread of diseases such as gastroenteritis and leptospirosis. Provide reasons for your suggestions. **(6 marks)**

**Total 15 marks**

**Write your answer to Question 5 here.**

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**Write your answer to Question 5 here.**

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- 6. (a) (i) Define the term 'pollution' and give ONE example of a water pollutant. **(3 marks)**
- (ii) Describe the process of eutrophication. **(3 marks)**
- (b) Heavy rains cause flooding in farmland areas in a Caribbean country.
  - (i) Explain why members of your community become ill after eating vegetables from the flooded areas, and suggest TWO measures that they should take to prevent the illness. **(5 marks)**
  - (ii) Your class is required to test the flood water for bacteria. Describe the test for bacteria, and suggest TWO methods that could be used to sterilize the flood water. **(4 marks)**

**Total 15 marks**

**Write your answer to Question 6 here.**

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Write your answer to Question 6 here.

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**END OF TEST**

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



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