CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

19 MAY 2021 (p.m.)

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SUBJECT HUMAN AND SOCIAL BIOLOGY – Paper 02

PROFICIENCY GENERAL

REGISTRATION NUMBER | | | | | | | | | | |

SCHOOL/CENTRE NUMBER					

NAME OF SCHOOL/CENTRE

CANDIDATE'S FULL NAME (FIRST, MIDDLE, LAST)

DATE OF BIRTH | D | D | M | M | Y | Y | Y | Y |

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FORM TP 2021081

TEST CODE **01253020**

MAY/JUNE 2021

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

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. Answer ALL questions.
2. Write your answers in the spaces provided in this booklet.
3. Do NOT write in the margins.
4. 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.**
5. **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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NOTHING HAS BEEN OMITTED.

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SECTION A

Answer ALL questions.

1. (a) Table 1 shows some of the steps involved in the birth process. Complete the table by correctly numbering EACH step to show the correct order in the birth process.

TABLE 1: THE BIRTH PROCESS

Order of Step	Step in Birth Process
	Baby is expelled head first
	Release of oxytocin
	Rhythmic contractions resulting in baby being pushed through the cervix and then the vagina
	Expulsion of placenta

(4 marks)

(b) State TWO **reliable** methods of birth control.

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(2 marks)

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(c) Table 2 shows data collected in five Caribbean countries comparing the number of live births of women who attended antenatal clinics versus those women who did not attend antenatal clinics.

TABLE 2: DATA ON LIVE BIRTH RATES PER 100 WOMEN

Country	Live Birth Rates/per 100 Women	
	Women Who Attended Antenatal Clinics	Women Who Did Not Attend Antenatal Clinics
Grenada	60	46
Guyana	45	35
Jamaica	75	55
Trinidad and Tobago	85	62
Suriname	26	46

(i) On the grid provided **on page 7**, plot a bar graph to show the live birth rates of the number of women who attended antenatal clinics and the women who did not attend antenatal clinics for EACH country shown in Table 1. **(5 marks)**

(ii) State which country had the HIGHEST number of live births as a result of their women attending antenatal clinics.

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(1 mark)

(iii) Suggest ONE reason why some countries had low live birth rates even though their women attended antenatal clinics.

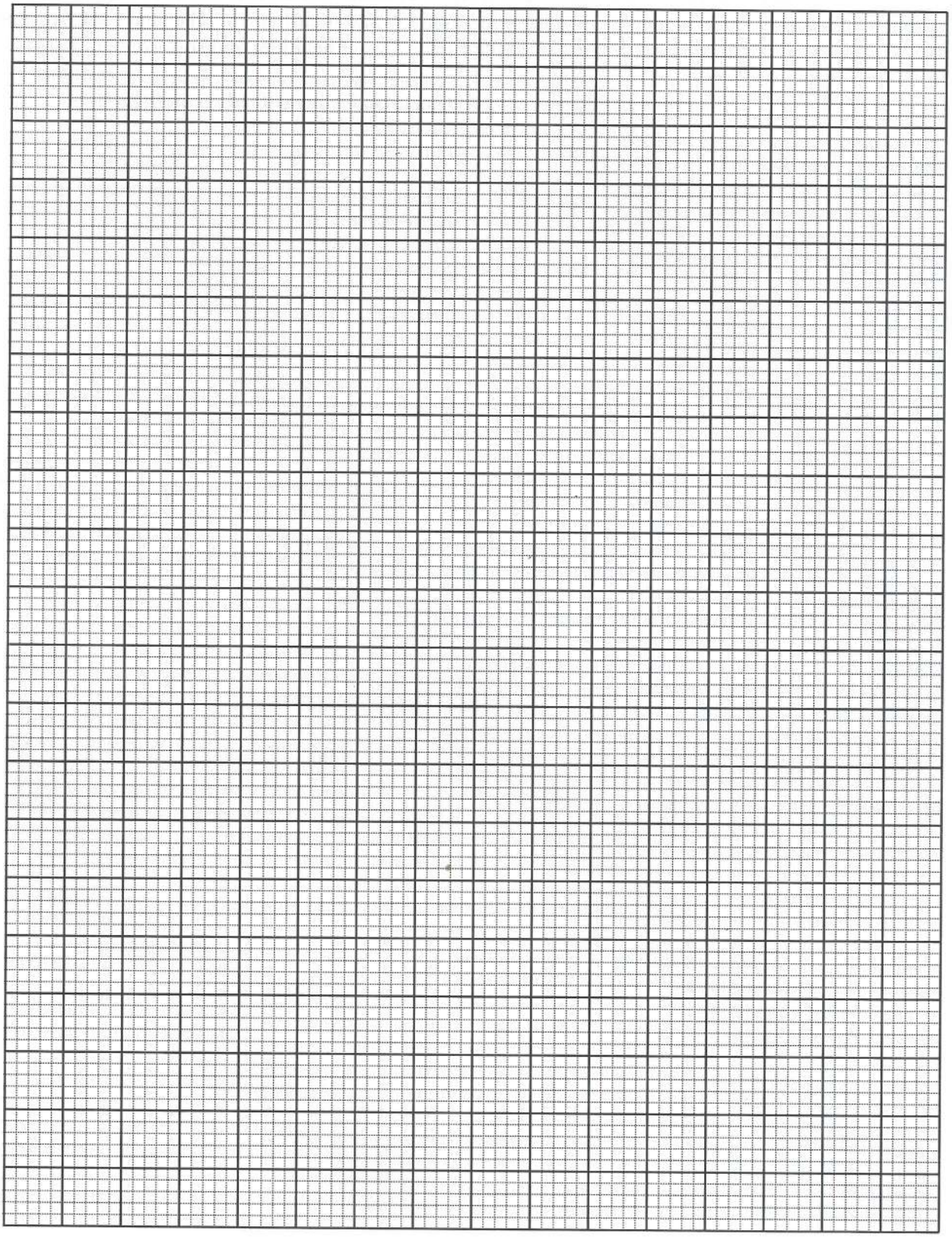
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(1 mark)



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(iv) A follow-up study was conducted on the women who attended antenatal clinics to determine the health of the mothers and their babies. The study showed that the mothers who breastfed their babies were healthier and so were their babies.

Suggest ONE reason for good health in the breastfeeding mothers and ONE reason for good health in the breastfed babies.

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(2 marks)

Total 15 marks

2. (a) Figure 1 shows a diagram of part of a food chain.

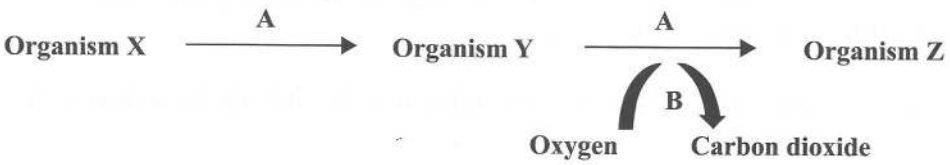


Figure 1. Food chain

(i) State what the arrows labelled A represent in Figure 1.

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(1 mark)

(ii) State what is occurring at the arrow labelled B in Figure 1.

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(1 mark)

(iii) Identify the organism that is the primary consumer and the organism that is the producer in the food chain above.

Primary consumer: .....

Producer: .....

(2 marks)

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(b) Stacy walks into her garden and sees mealy bugs feeding on the leaves of her Croton plant. To protect the plant, she introduces ladybugs to eat the mealy bugs. Stacy becomes upset when she notices a frog eating her recently purchased ladybugs. Later that day, Stacy sees a garden snake eating the frog.

(i) Construct a food chain to represent the information provided in the scenario above.

(5 marks)

(ii) A month later, Stacy finds the garden snake dead and decomposing in her yard. Name TWO types of organisms that would be responsible for the snake's decay.

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(2 marks)

(iii) Stacy removes the dead snake from her yard and instead of throwing it in the bush, buries it near the roots of the Croton plant. Explain how Stacy's actions would be beneficial to the Croton plant.

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(3 marks)

(iv) State whether or not Stacy would have the same number of snakes in her yard as frogs.

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(1 mark)

Total 15 marks

3. Figure 2 shows a cross-section of the skin.

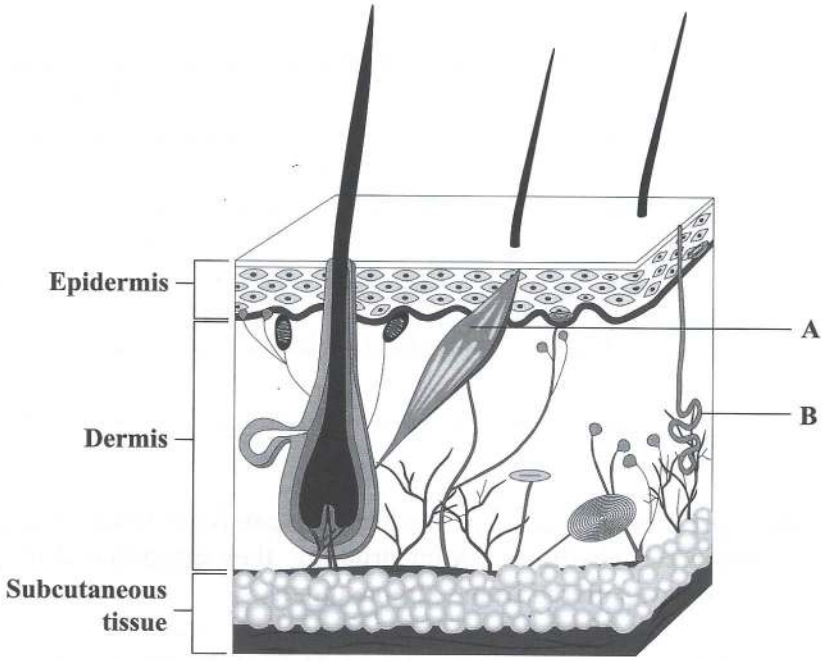


Figure 2. Cross-section of the skin

(a) Identify EACH structure labelled A and B.

Structure A .....

Structure B .....

(2 marks)

(b) Complete the paragraph below by selecting the TWO correct responses from the words and phrases provided in the box below.

negative feedback, positive feedback, control of body temperature, childbirth

Homeostasis is the way in which constant conditions are maintained in the body, despite changes in the environment. When the body detects changes within its environment and produces a response to bring it back to normal, this describes a ..... mechanism. An example of this mechanism is ..... .

(2 marks)

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(c) State TWO responses which occur in the body when carbon dioxide levels in the blood increase.

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(2 marks)

(d) A group of friends go to a party and drink excessive amounts of alcoholic beverages which are rich in carbohydrates. After drinking, they experienced frequent urination and the following day, suffered from extreme thirst.

Explain why the friends experienced EACH of the following signs/symptoms:

(i) Frequent urination

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(2 marks)

(ii) Extreme thirst

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(2 marks)

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(e) In addition to frequent urination and extreme thirst, one of the friends, Pedro, experienced dizzy spells and lethargy the next day.

(i) State the effect that drinking alcoholic beverages would have on Pedro's blood glucose levels.

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(1 mark)

(ii) Explain how Pedro's body would respond to eliminate the effect stated in (i).

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(2 marks)

(iii) Suggest the disease that Pedro is MOST likely suffering from and state why he would have experienced dizzy spells and lethargy.

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(2 marks)

Total 15 marks

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4. (a) Table 3 shows the steps involved in the large-scale purification of water from a dam. Complete Table 3 by numbering EACH step in the process, in the correct order. One step has been numbered for you.

TABLE 3: STEPS IN LARGE-SCALE WATER PURIFICATION

Order in Process	Step in Large-Scale Water Purification
	Air is mixed vigorously into tanks with waste water
	Disposal of effluent
	Removal of non-biodegradable material
	Breakdown of organic materials by microorganisms
2	Large particles of grit or sand settle

(4 marks)

(b) State TWO ways in which human activity could negatively impact water supplies.

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(2 marks)

(c) Leah lives in a rural village where most residents make their living by raising animals and growing crops. Recent rains have left the village flooded and Leah plays in the flood water from early in the morning to late in the evening.

(i) State the TWO contaminants that Leah and her community could be exposed to after the flood.

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(2 marks)

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(ii) Suggest THREE diseases that Leah and her community are likley to contract as a result of the flooding.

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(3 marks)

(iii) Recommend FOUR precautions that the residents could take during the flooding crisis to prevent the spread of diseases.

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(4 marks)

Total 15 marks

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SECTION B

Answer ALL questions.

5. (a) The human skeleton is made up of approximately 206 bones.

(i) Identify TWO bones located in the chest region of the skeleton.

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(2 marks)

(ii) State TWO functions of the skeleton, other than movement.

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(2 marks)

(iii) Compare the movement of a hinge joint with the movement of a ball and socket joint.

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(2 marks)

(b) After class, Tina was having an argument about ligaments and tendons. She believed that ligaments and tendons are the same because both are made up of connective tissue and are attached to bones.

Explain why Tina's belief was not entirely accurate.

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(5 marks)

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(c) A middle-aged man goes to the clinic complaining of stiff, painful joints and a decrease in mobility.

Suggest the condition from which he MOST likely suffers and explain how he may have developed this condition.

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(4 marks)

Total 15 marks

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6. (a) (i) State ONE example of continuous variation and ONE example of discontinuous variation.

Continuous variation .....

Discontinuous variation .....

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(2 marks)

(ii) State TWO reasons why genetic variation is important to organisms.

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(2 marks)

(b) The *Aedes aegypti* mosquito lives in warm climates and lays its eggs in stagnant water. Meteorologists predict that the Caribbean will have longer dry seasons but when it rains, it would often result in flooding. Surprisingly, scientists predict that there could be an increase in the spread of mosquito-borne diseases during the long dry seasons.

(i) Name the disease that the *Aedes aegypti* mosquito carries and identify ONE **other** mosquito-borne disease.

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(2 marks)

(ii) Explain why scientists are predicting that long dry seasons could increase levels of mosquito-borne diseases.

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(3 marks)

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(c) Brendon is a 10-year-old boy who does not like to bathe or change his dirty clothes. Aside from an awful body odour, explain to Brendon THREE health challenges he may experience as a result of these practices.

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(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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EXTRA SPACE

If you use this extra page, you MUST write the question number clearly in the box provided.

Question No. ☐

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1. **Fill in all the information requested clearly in capital letters.**

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SUBJECT: HUMAN AND SOCIAL BIOLOGY – Paper 02

PROFICIENCY: GENERAL

REGISTRATION NUMBER: | | | | | | | | | | |

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: _____

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