

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE®  
EXAMINATION

18 MAY 2022 (p.m.)



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SUBJECT HUMAN AND SOCIAL BIOLOGY – Paper 02

PROFICIENCY GENERAL

REGISTRATION NUMBER 

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SCHOOL/CENTRE NUMBER  

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NAME OF SCHOOL/CENTRE  

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

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MAY/JUNE 2022

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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SECTION A

Answer ALL questions.

1. Figure 1 shows an image of a blood smear.

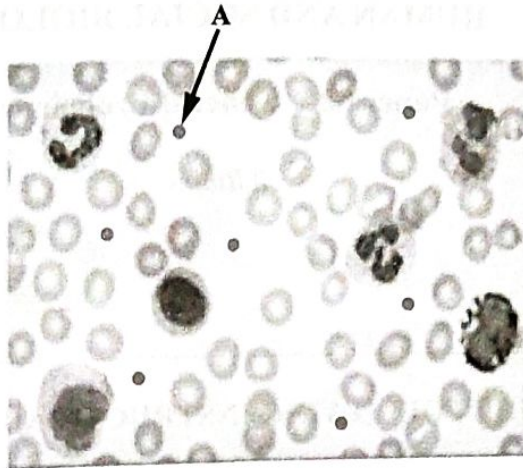


Figure 1. Blood smear

(a) Identify the blood component labelled A and state its function.

Blood component A: .....

Function: ..... (2 marks)

(b) (i) Identify the MOST abundant cell shown in Figure 1.

..... (1 mark)

(ii) State the MAIN function of the cell identified in (b) (i) and give TWO ways in which it is adapted for its function.

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..... (3 marks)

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- (c) Table 1 and Table 2 show the number of males and females, aged 18–50 years, who tested positive for the herpes simplex type 2 virus and human papillomavirus (HPV), respectively, in a certain country.

**TABLE 1: MALES AND FEMALES WITH HERPES SIMPLEX TYPE 2**

Age Group (years)	Number of Males with Herpes Simplex Type 2	Number of Females with Herpes Simplex Type 2
18–25	190	145
26–33	125	115
34–41	170	191
42–50	95	80

**TABLE 2: MALES AND FEMALES WITH HUMAN PAPILLOMAVIRUS (HPV)**

Age Group (years)	Number of Males with Human Papillomavirus	Number of Females with Human Papillomavirus
18–25	125	160
26–33	105	115
34–41	140	160
42–50	95	80

- (i) From Table 1, identify the age group among the **males** which had the **HIGHEST** incidence of herpes simplex type 2.

.....  
(1 mark)

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2. (a) Write the balanced chemical equation for the process of photosynthesis.

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(2 marks)

(b) Figure 2 shows a diagram of the carbon cycle.

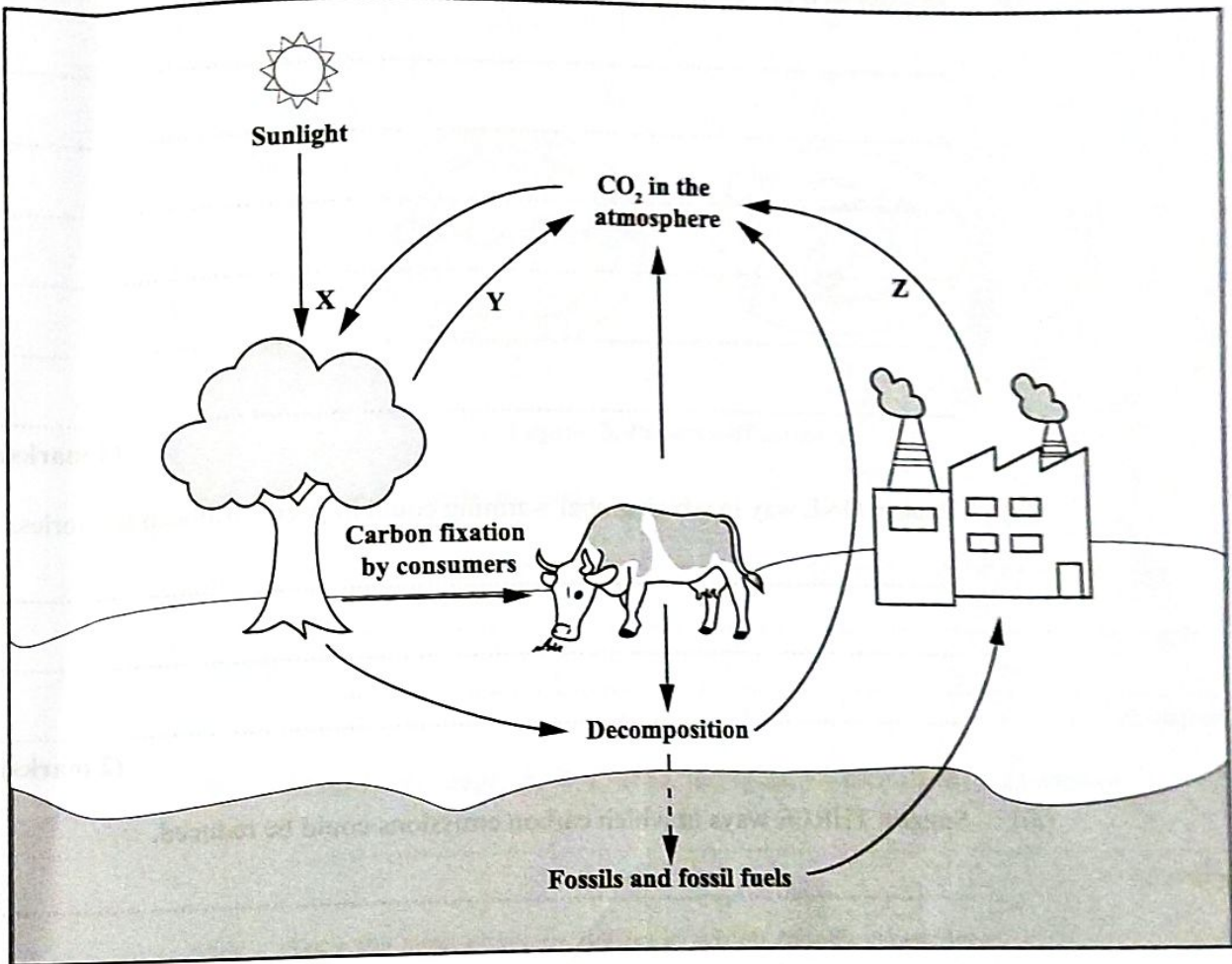


Figure 2. Carbon cycle

(i) Identify the processes labelled X, Y and Z in Figure 2.

X: .....

Y: .....

Z: .....

(3 marks)

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(ii) Name ONE organism which causes decomposition in Figure 2.

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**(1 mark)**

(c) The residents in a village clear land for agriculture by burning away trees, shrubs and grass.

(i) Discuss how this practice could contribute to global warming.

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**(4 marks)**

(ii) Explain ONE way in which global warming could impact Caribbean territories.

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**(2 marks)**

(iii) Suggest THREE ways in which carbon emissions could be reduced.

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**(3 marks)**

**Total 15 marks**

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3. Figure 3 shows four stages in the process of mitosis.

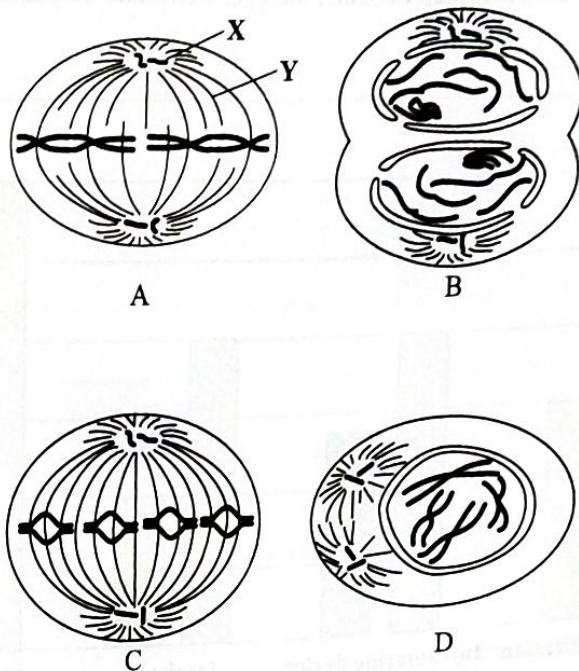


Figure 3. Process of mitosis

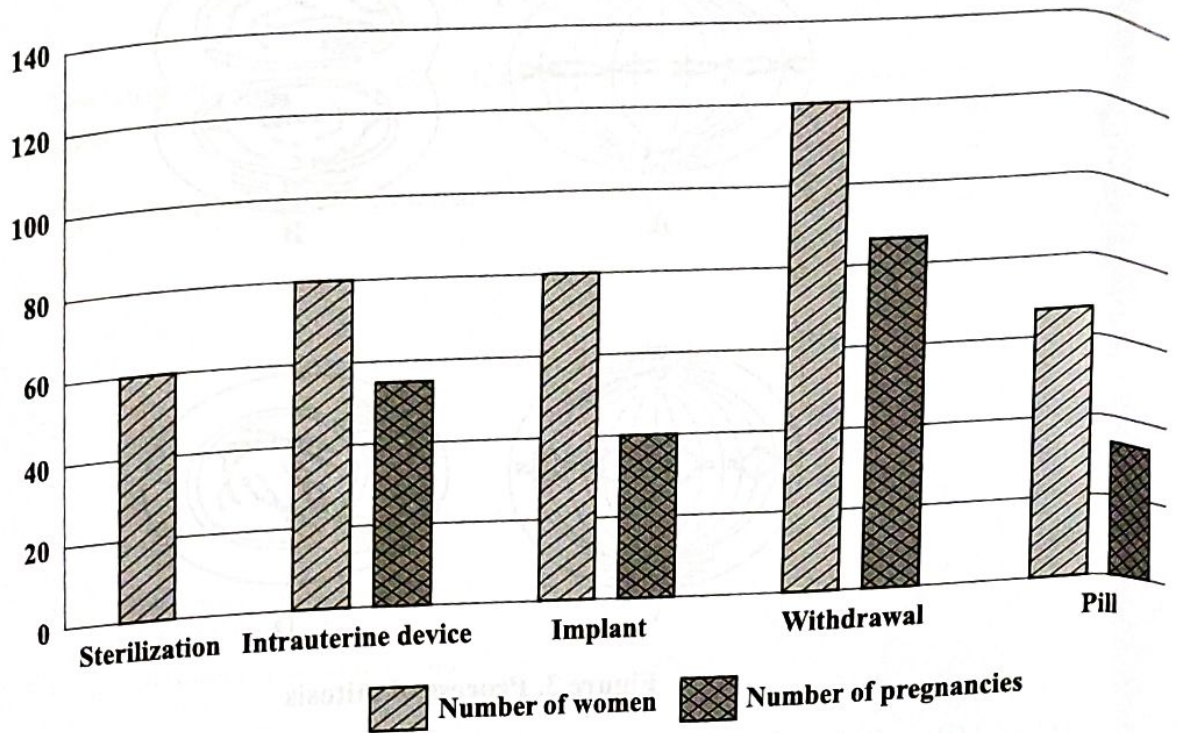
- (a) (i) Define the term 'mitosis'.  
.....  
.....  
..... (2 marks)
- (ii) Identify the stage, A, B, C or D, in Figure 3 which shows the telophase.  
..... (1 mark)
- (iii) State the type of reproduction in which mitosis takes place.  
..... (1 mark)
- (iv) State TWO features of the process of mitosis.  
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.....  
..... (2 marks)

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(b) Figure 4 shows a comparison of the contraceptive methods used and the number of pregnancies in women between the ages of 15 and 40 years.



**Figure 4. Comparison of contraceptive methods used and the number of pregnancies in women aged 15–40 years**

(i) Identify the contraceptive method which resulted in the LEAST number of pregnancies and explain why this method is the MOST effective.

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(3 marks)

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(ii) Identify the contraceptive method which resulted in the GREATEST number of pregnancies and explain why this method is the LEAST effective.

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**(3 marks)**

(iii) State which of the other contraceptive methods in Figure 4 was shown to be as effective as the pill.

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**(1 mark)**

(iv) Suggest TWO reasons why the degree of effectiveness for the pill as shown in Figure 4 is not as high as expected.

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**(2 marks)**

**Total 15 marks**

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4. (a) Distinguish between a 'pandemic' and an 'epidemic'.

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(2 marks)

(b) Table 3 shows selected drugs and their classification. Complete Table 3 by inserting a missing drug or its classification. The first row has been completed for you.

**TABLE 3: CLASSIFICATION OF SELECTED DRUGS**

Drug	Classification
Cocaine	Stimulant
.....	Sedative
Heroin	.....

(2 marks)

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(c) Figure 5 is a graph which shows trends observed in the smoking of cigarettes and the practice of vaping among secondary school students in a certain country.

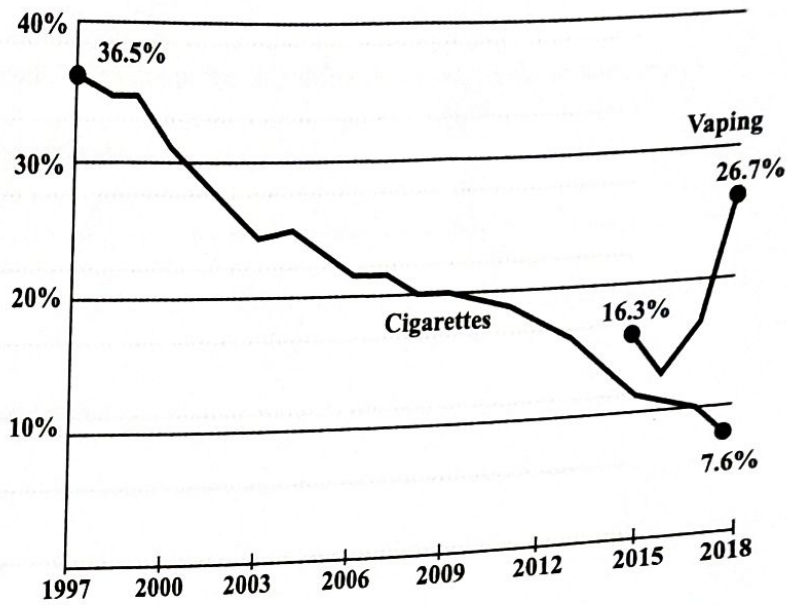


Figure 5. Trends in cigarette smoking and vaping among secondary school students

(i) State ONE healthy trend and ONE unhealthy trend that can be observed from the graph in Figure 5.

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(2 marks)

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- (ii) Nicotine impairs brain development resulting in a lack of focus and poor judgement. Explain ONE social impact and ONE economic impact that could result from the unhealthy trend observed in Figure 5.

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(4 marks)

- (iii) Studies have shown that vaping leads to an increased number of bacteria on the teeth. Suggest the dental problem that persons who vape are MOST likely to develop. Explain your answer.

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(3 marks)

- (iv) State TWO **other** negative health effects that could result from the practice of vaping.

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(2 marks)

**Total 15 marks**

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**SECTION B**

**Answer ALL questions.**

5. (a) Briefly describe EACH of the following processes in the water cycle:

(i) Evaporation

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..... (1 mark)

(ii) Condensation

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..... (1 mark)

(iii) Precipitation

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

(iv) Filtration

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..... (1 mark)

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- (iii) Suggest THREE ways in which the residents in Lana's village could reduce the negative impacts of pollution.

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(3 marks)

Total 15 marks

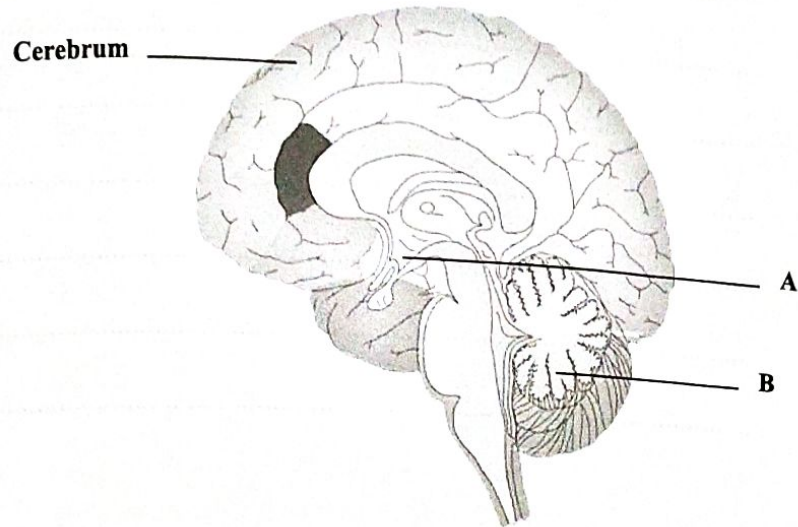
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6. Figure 6 shows an internal view of the human brain.



**Figure 6. Internal view of the human brain**

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(a) Identify the structures labelled A and B and state ONE function of EACH structure.

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(4 marks)

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(b) State ONE example of a spinal reflex action and ONE example of a cranial reflex action.

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(2 marks)

(c) Frank awoke from a three-month coma and must now learn to walk again.

(i) Explain the process that must occur in his nervous system to enable him to take a step.

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(5 marks)



(ii) Identify the neurotransmitter that is associated with the process in (c) (i) and describe how the signal will move from one neuron to another.

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(4 marks)

**Total 15 marks**

**END OF TEST**

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

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