

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE®  
EXAMINATION

16 JANUARY 2019 (a.m.)



FILL IN ALL THE INFORMATION REQUESTED CLEARLY IN CAPITAL LETTERS.

TEST CODE 

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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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DATE OF BIRTH 

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SIGNATURE \_\_\_\_\_

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JANUARY 2019

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.
2. Answer ALL questions.
3. Do NOT write in the margins.
4. Write your answers in the spaces provided in this booklet.
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.**

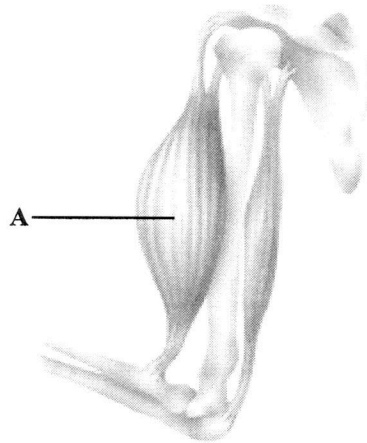
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**SECTION A**

**Answer ALL questions in this section.**

1. Figure 1 shows the image of an upper limb. The image shows a skeletal muscle labelled A which forms one of a pair of antagonistic muscles.



**Figure 1. Skeletal muscles of an upper limb**

- (a) (i) Identify the muscle labelled A.

.....  
(1 mark)

- (ii) Name the muscle that is antagonistic to the muscle named in (a) (i).

.....  
(1 mark)

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(b) Contraction and relaxation of the skeletal muscles in Figure 1 are necessary for locomotion.

(i) Explain how these muscles work together to cause movement of the forearm.

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(2 marks)

(ii) State TWO reasons why locomotion is important to humans.

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(2 marks)

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- (c) Malaria and dengue are two diseases that are prevalent throughout the Caribbean.

Table 1 and Table 2 show the incidence of the diseases in two Caribbean islands, X and Y, during the period 1990 to 1994.

**TABLE 1: NUMBER OF CASES OF DENGUE FEVER  
IN CARIBBEAN ISLAND X BETWEEN 1990 AND 1994**

Year	Number of Cases of Dengue Fever
1990	160
1991	125
1992	80
1993	50
1994	0

**TABLE 2: NUMBER OF CASES OF MALARIA IN  
CARIBBEAN ISLAND Y BETWEEN 1990 AND 1994**

Year	Number of Cases of Malaria
1990	30
1991	0
1992	45
1993	70
1994	117

- (i) On the grid provided on page 7, plot a bar graph to show the number of dengue cases and malaria cases in EACH year shown in Table 1 and Table 2.

(3 marks)

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- (ii) Which island had the **greater** number of cases of disease during the period 1990–1994?

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(1 mark)

- (iii) Suggest THREE reasons that could account for the pattern shown in the number of dengue cases in Caribbean island X.

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(3 marks)

- (iv) State TWO similarities between malaria and dengue.

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(2 marks)

**Total 15 marks**

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2. (a) Define the term 'excretion'.

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(2 marks)

(b) Figure 2 shows a diagram of structures of the excretory system.

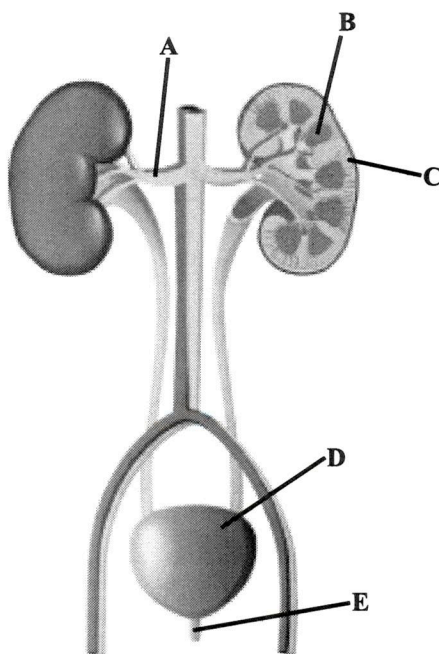


Figure 2. Structures of the excretory system

Match EACH function below with its appropriate structure by writing the letters, A, B, C or D in the spaces provided. (Please note that there are more structures given than there are functions).

(i) The structure that carries blood away from the kidney ..... (1 mark)

(ii) The structure that houses the Bowman's capsule ..... (1 mark)

(iii) The structure through which urine leaves the body ..... (1 mark)

(iv) The structure that stores urine ..... (1 mark)

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(c) Reba is 50 pounds overweight. Her doctor tells her that she has developed diabetes mellitus.

(i) Predict THREE effects Reba may experience if she leaves her diabetes unmanaged.

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(3 marks)

(ii) State THREE recommendations which Reba's doctor may suggest to help her manage her diabetes.

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(3 marks)

(iii) Reba's husband, Mike, is a high-powered lawyer who is also overweight and smokes for relaxation. Suggest ONE disease that Mike could be at risk for developing and give TWO symptoms of the disease.

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(3 marks)

**Total 15 marks**

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3. (a) The nervous system, together with the endocrine system, regulates all of the activities of the human body. It consists of two major divisions, the central nervous system and the peripheral nervous system.

(i) Name the TWO **main** components of the central nervous system.

.....  
.....

(2 marks)

(ii) Name the **main** component of the peripheral nervous system.

.....

(1 mark)

(b) The table below shows FOUR functions of different parts of the brain.

<b>Functions of the Brain</b>
A – Controls heart rate and blood pressure
B – Secretes hormones that control growth and metabolism
C – Controls conscious thought, memory and learning
D – Coordinates balance, posture and movement

Match EACH part of the brain below with its appropriate function by writing the letters, A, B, C or D in the spaces provided. **(Please note that there are more functions listed than there are parts of the brain.)**

(i) Cerebrum

.....

(1 mark)

(ii) Cerebellum

.....

(1 mark)

(iii) Pituitary gland

.....

(1 mark)

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- (c) During a Human and Social Biology class, a teacher explained the difference between voluntary and involuntary actions.

Name ONE voluntary action and explain how the action occurs.

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(4 marks)

- (d) Identify TWO drugs which act as stimulants and ONE drug which acts as a depressant.

Stimulant .....

Depressant .....

(3 marks)

- (e) Differentiate between 'physical drug dependence' and 'psychological drug dependence'.

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(2 marks)

**Total 15 marks**

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**NOTHING HAS BEEN OMITTED.**

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4. (a) Conrad and his sister, April, are fraternal twins.

(i) State the genotype that determines the gender of Conrad and the gender of April.

Genotype of Conrad .....

Genotype of April .....

(2 marks)

(ii) Identify the chromosome that makes Conrad male and the chromosome that makes April female.

Male chromosome .....

Female chromosome .....

(2 marks)

(b) Figure 3 shows a karyotype of an individual with a genetic disorder that occurs on chromosome 21.

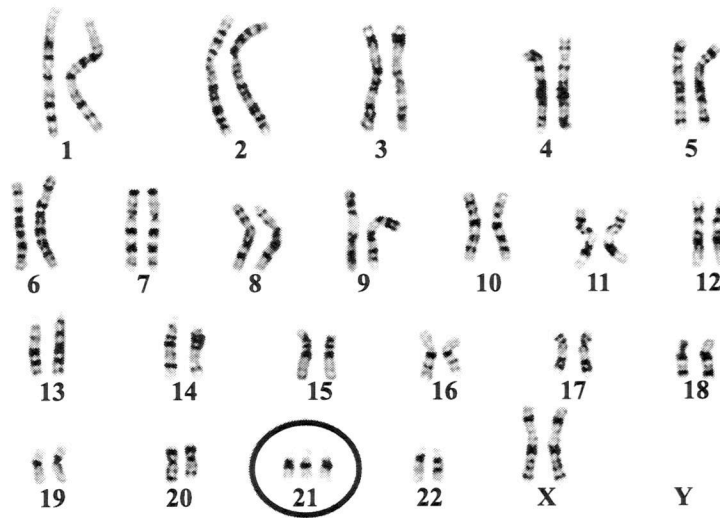


Figure 3. Karyotype of genetic disorder

(i) Name the disorder that this individual may have.

.....  
(1 mark)

(ii) State which parent(s) passes on the chromosome that determines the sex of this individual.

.....  
(1 mark)

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(iii) State whether or not this disease can be inherited.

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

(c) Define the term 'degenerative disease'.

.....  
.....  
.....  
**(2 marks)**

(d) Haemophilia and sickle-cell anaemia are both genetic disorders. State TWO similarities and TWO differences between these diseases.

Similarities

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Differences

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**(6 marks)**

**Total 15 marks**

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**SECTION B**

**Answer ALL questions in this section.**

5. (a) Due to the worldwide prevalence of diseases, health and health-related issues have become a major concern. Personal hygiene is extremely important to one's overall good health and when neglected, certain infections can develop.

- (i) Define the term 'good health'.

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**(4 marks)**

- (ii) Name TWO infections that could develop as a result of improper personal hygiene.

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**(2 marks)**

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6. (a) On a field trip, David visited the municipal sewage treatment plant.

(i) List FOUR stages in the sewage treatment process he would have observed.

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**(4 marks)**

(ii) Name TWO unsafe methods of sewage disposal used in the home.

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**(2 marks)**

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(b) Benjamin has a pit latrine that is filled with faecal matter due to slow decomposition. He is thinking of using the contents of the latrine to fertilize his garden.

(i) Advise Benjamin as to whether this is a good idea. State THREE reasons to support your response.

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**(4 marks)**

(ii) Suggest TWO actions Benjamin should take when his pit latrine is filled with faecal matter.

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**(2 marks)**

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(c) Charlotte walks through her sweet potato patch and notices that one vine has larger leaves than the other vines. She later discovers that the vine with larger leaves produces very large sweet potatoes.

(i) Name the event that could have caused the difference in the size of the leaves and the sweet potatoes.

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

(ii) State TWO reasons why the event named in (c) (i) is beneficial.

.....  
.....  
.....  
**(2 marks)**

**Total 15 marks**

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**END OF TEST**

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









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## CANDIDATE'S RECEIPT

### INSTRUCTIONS TO CANDIDATE:

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

TEST CODE: 

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SUBJECT: HUMAN AND SOCIAL BIOLOGY – Paper 02

PROFICIENCY: GENERAL

REGISTRATION NUMBER: 

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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: \_\_\_\_\_

