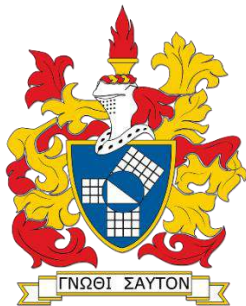




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SAHETI SCHOOL

LIFE SCIENCE

GRADE 12

PAPER 2

EXAMINER : B SOOBRAMONEY

DATE : 25 JULY 2023

MODERATOR : EXTERNAL

HOURS : 2 hrs

MARKS : 100

STUDENT NAME:

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY:

1. This question paper consists of **15** pages and a **Source Material Booklet** of **19 (i-xix)** pages. Please check that your question paper is complete.
2. The question paper consists of **THREE** questions. Question 1 and Question 2 are case studies and Question 3 is an essay.
3. Read the sources provided in the Source Material Booklet and use this information and your own knowledge to answer all the questions.
4. **Answer ALL the questions on the question paper and hand this in at the end of the examination. Remember to write your name in the space provided.**
5. Read the Questions carefully.
6. Use the total marks that can be awarded for each part of the questions in Question 1 and 2 as an indication of the detail required.
7. It is in your own interest to write legibly and to present your work neatly.
8. ONE blank page (page 15) is included at the end of the paper. If you run out of space for a question, use this page. Clearly indicate the question number of your answer should you use this extra space.

SECTION A**QUESTION 1**

Refer to pages ii to vi of the Source Material Booklet. Use this information as well as your own knowledge to answer the questions that follow.

- 1.1 Study the following table which consists of a statement in COLUMN 1 and two biological descriptions/terms in COLUMN 2. Decide which description/term from COLUMN 2 (if any) relates to the statement in COLUMN 1.

Write down your choice using the following codes:

- A** If option 1 is correct
- B** If option 2 is correct
- C** If both options are correct
- D** If neither option is correct

	COLUMN 1	COLUMN 2	Answer
1.1.1	Evolution of 10 different capuchino seedeater species.	1. Adaptive radiation 2. Divergent evolution	
1.1.2	New species form because some members of a population become isolated, by a river or a mountain range.	1. Allopatric speciation 2. Convergent evolution	
1.1.3	The evidence of evolution in capuchino seedeaters.	1. Biogeography 2. Modification by descent	

(3)

- 1.2 Campagna and his colleagues studied two species of southern capuchino seedeater birds.

- 1.2.1 Define the term species.

(2)

- 1.2.2 What mechanism of reproductive isolation is causing speciation in the capuchino seedeaters?

(1)

- 1.2.3 Describe how speciation took place in the two capuchino seedeater populations.

(5)

- 1.2.4 Explain what could have caused the gene for plumage colour to become different in the two different seedeater populations.

(2)

- 1.2.5 Explain TWO ways in which speciation of the capuchino seedeaters on the Iberá Wetlands is different from the speciation of the finches on the Galapagos Islands.

(4)

- 1.3 Females only mate with the males who have established and defended certain territories. What is the advantage for the species that the females only mate with males who can establish and defend a territory?

(2)

- 1.4 Refer to **Figure 1.4** and the information on Campagna's bird model experiment.

- 1.4.1 Explain why the bird models were exposed to males from other unrelated birds as well as to capuchino seedeater males.

(2)

- 1.4.2 What can be concluded from the results of the experiment conducted by Campagna and his team?

(2)

- 1.5 The source states that speciation is very hard to observe. Why is this so?

(1)

- 1.6 The process of sexual selection is an even more powerful evolutionary force than the natural selection process. Provide evidence from the text to support this statement.

(1)

- 1.7 Darwin spent many years proving the theory of natural selection. Name ONE other scientist that you have studied who also came up with the theory of natural selection.

(1)

- 1.8 Why did the peacock and its beautiful feathers not fit into Darwin's theory of natural selection?

(4)

[30]

QUESTION 2:

Refer to pages vii to x of the Source Material Booklet. Use this information as well as your own knowledge to answer the questions that follow.

2.1 Where was the best fossil representation of *H. heidelbergensis* found?

_____ (1)

2.2 What fossil part/s did the team study?

_____ (2)

2.3 Why was it considered difficult initially, to date the remains of Broken Hill?

_____ (2)

2.4 Elaborate on the resultant controversy caused through the published study of the Broken Hill fossil?

_____ (3)

- 2.5 Using the range of dates (referred to specifically in the text portion of the source) that stipulated when *H. heidelbergensis* existed, do you feel that these are then accurately represented in **Figure 2.3**? Briefly substantiate your answer.

(3)

- 2.6 Using **Figure 2.3**, determine the average size of *H. heidelbergensis*' brain.

(1)

- 2.7 According to the information in the text, there is a *Homo* species that is not represented on the human phylogeny in **Figure 2.3** shown on page x.

Identify this missing species and give a possible reason as to why it may have been excluded.

(2)

2.8 According to **Figures 2.1 and 2.2**, list THREE observable characteristics that allowed *H. heidelbergensis* to be classified in the *Homo* genus.

(3)

2.9 State TWO cultural characteristics that *H. heidelbergensis* shared with *H. sapiens*.

(2)

2.10 Identify TWO *Homo* species who existed simultaneously (at the same time) in evolutionary history.

(2)

2.11 What fossil evidence was found to indicate that *H. heidelbergensis* was permanently bipedal?

(2)

2.12 Briefly justify why Africa is considered to be the origin of most Hominid species.

(2)

2.13 According to **Figure 2.3** on page x of the Source Material Booklet:

(a) Which species is modern human's closest relative? (1)

(b) What is the common ancestor to the *Homo* genus? (1)

2.14 Briefly explain, using the principle of **micro**evolution, how different populations of *Homo sapiens* have evolved around the world.

(3)

[30]

60 marks

SECTION B**QUESTION 3**

Refer to pages xi to xix of the Source Material Booklet

Consider the following statement:

'I think that we've stopped evolving.' – David Attenborough

Using the source material provided as well as your own knowledge, discuss your opinion on the statement in the form of an essay of 2½ – 3 pages.

In your response you are expected to:

Read the source material carefully.

- Take a definite stand on the statement.
- Plan your essay before you start writing. Your planning will be marked.
- Present a debated argument. Use relevant information from sources A–E as well as your own knowledge of Life Sciences to support your point of view.
- Arrange the information to best develop your argument.
- Write in a scientifically appropriate way.
- **In your essay, ensure that you have discussed at least nine different facts from the sources.**

40 marks

Total: 100 marks

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ADDITIONAL SPACE (ALL QUESTIONS)

**REMEMBER TO CLEARLY INDICATE AT THE QUESTION THAT YOU USED THE
ADDITIONAL SPACE TO ENSURE THAT ALL ANSWERS ARE MARKED.**

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