



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

SEKHUKHUNE SOUTH DISTRICT

NATIONAL
SENIOR CERTIFICATE

GRADE 12

LIFE SCIENCES
15 AUGUST 2023
Topic Test: Evolution

MARKS: 50

DURATION: 50 Minutes

This question paper consists of 7 pages including the cover page

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Number the answers correctly according to the numbering system used in this question paper.
3. Present your answers according to the instructions of each question.
4. Do ALL drawings in pencil and label them in blue or black ink.
5. You must use a non-programmable calculator, protractor and compass where necessary.
6. Only draw diagrams and flow charts when asked to do so.
7. The diagrams in this question paper are not necessarily drawn to scale.
8. Do NOT use graph paper.
9. Write neatly and legibly.

SECTION A**QUESTION 1**

1.1 Various options are provided as possible answers to the following questions.

Choose the answer and write only the letter (A to D) next to the question numbers (1.1.1 to 1.1.4) in the ANSWER BOOK, e.g. 1.1.4 D.

1.1.1 Which ONE of the following is a mechanism of reproductive isolation?

- A Extinction
- B Breeding at different times of the year.
- C Mutation
- D Independent assortment

1.1.2 Which one of the following statements is CORRECT for the “Out of Africa” hypothesis?

- A All modern humans originated in Africa and migrated to other parts of the world.
- B All modern humans evolved in Africa apes and then migrated to other parts of the world.
- C The most developed artifacts were found in Africa.
- D An analysis of mutations on the mitochondrial DNA shows that the oldest male ancestors were located in Africa.

1.1.3 The theory of evolution has been supported by a comparative study of the Structure of vertebrate forelimbs from the fossil record.

Which ONE of the following represents the statement above?

- A Genetic evidence
- B Modification by descent
- C Natural selection
- D Biogeography

3 x 2 **(6)**

1.2 Give the correct **biological term** for each of the following descriptions. Write only the term next to the question numbers (1.2.1 to 1.2.4) in the ANSWER BOOK.

1.2.1 The permanent disappearance of a species from Earth.

1.2.2 Having a protruding jaw

1.2.3 An explanation describing evolution as consisting of long phases of little change alternating with short phases of rapid change.

1.2.4 A proposed solution to a problem.

4 x 1 (4)

1.3 Indicate whether each of the statements in COLUMN I applies to **A ONLY**, **B ONLY**, **BOTH A AND B** or **NONE** of the items in COLUMN II. Write **A only**, **B only**, **both A and B** or **none** next to the question numbers (1.3.1 to 1.3.3) in the ANSWER BOOK

	COLUMN I	COLUMN II
1.3.1	A testable statement that may be accepted or rejected	A: Theory B: Law
1.3.2	The selection and breeding of organisms with desirable characteristics	A: Natural selection B: Artificial selection
1.3.3	Evidence of evolution	A: Comparative anatomy B: Fossil record

3 x 2 (6)

TOTAL SECTION A: 16

SECTION B**QUESTION 2**

2.1 The diagrams below show the skulls of two organisms A and B.

Organism	Upper jaw	Skull (bottom view)	Foot
A			
B			

2.1.1 Tabulate TWO visible differences between the upper jaws of organisms A and B

(5)

2.1.2 Give TWO visible difference between the feet of organisms A and B

(4)

2.1.3 Which organism (A or B) is more likely to be bipedal?

(1)

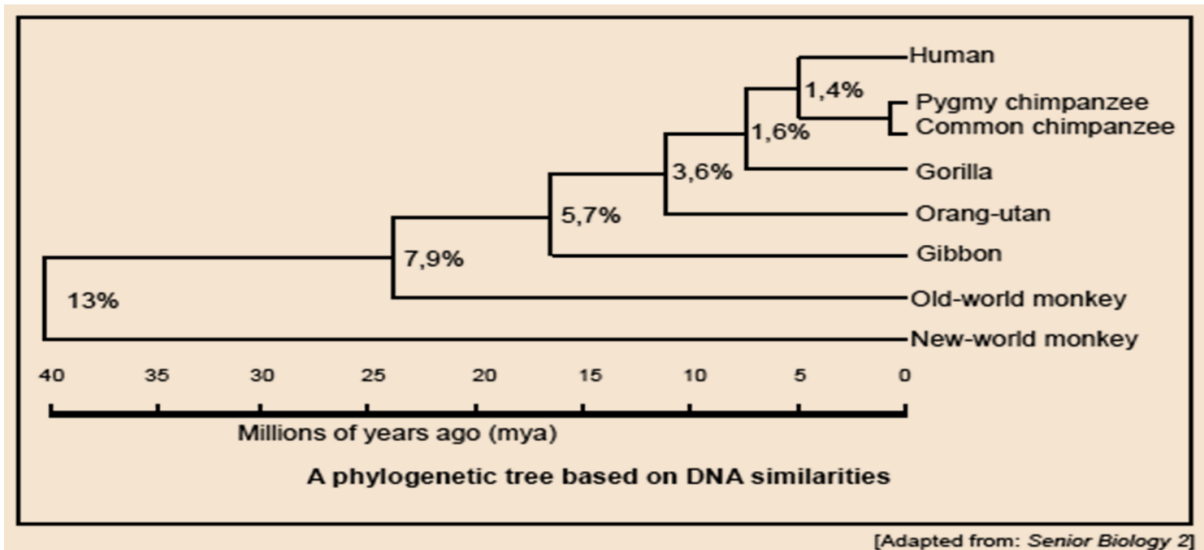
2.1.4 Give a reason for your answer to question 2.1.3.

(2)

(12)

2.2 The diagram below shows a phylogenetic tree based on DNA similarities.

The percentage next to each branch shows the amount of difference in the Genome of the two relevant groups.



2.2.1 From the diagram, determine how long ago the chimpanzees split

From the line to humans.

(2)

2.2.2 Which organism is most closely related to humans?

(1)

2.2.3 Calculate DNA similarity between the chimpanzee and the human.

(2)

(17)

QUESTION 3

3.1 The result of an investigation are shown in the table below.

Type of environment	Dark moths	Pale moths
Polluted	150	40
Unpolluted	30	170

3.1.1 Formulate a hypothesis for the above investigation.

(3)

3.1.2 Draw a bar graph on the same system of axes to represent the above data.

(6)

3.1.3 Using the table and your knowledge of natural selection, explain the result

For the polluted environment.

(4)

3.2. Studies have shown that the hotter the environment, the more stripes zebras
Have.

3.2.1 What type of genetic variation would result in different numbers of
stripes? (1)

3.2.2 What is biological species? (3)

[17]

TOTAL SECTION B: 34

GRAND TOTAL: 50

WEIGHTING GRID**GRADE 12 TOPIC TEST LFSC**

	A	B	C	D	TOPIC
					Evolut ion
NORM	20	13	10	7	
Question	2				2
1.1.1	2				2
1.1.2		2			2
1.1.3					
1.2.1	1				1
1.2.2	1				1
1.2.3	1				1
1.2.4	1				1
1.3.1		2			2
1.3.2		2			2
1.3.3		2			2
2.1.1	5				5
2.1.2			4		4
2.1.3		1			1
2.1.4		2			2
2.2.1			2		2
2.2.2			1		1
2.2.3			2		2
3.1.1				3	3
3.1.2				6	6
3.1.3	4				4
3.2.1	1				1
3.2.2	3				3
Actual Marks	21	11	09	09	
Norm Marks	20	13	10	07	