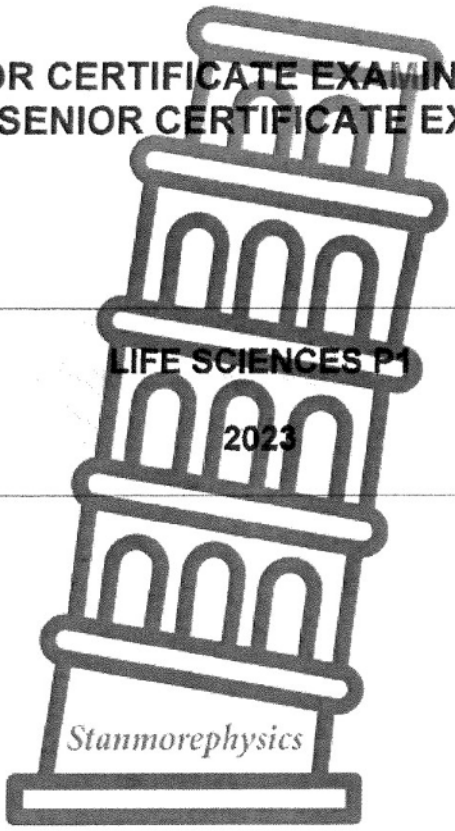
basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

LIFE SCIENCES P1

2023



MARKS: 150

TIME: 2½ hours

This question paper consists of 15 pages.

1.5 The diagrams below show parts of the middle and inner ear.

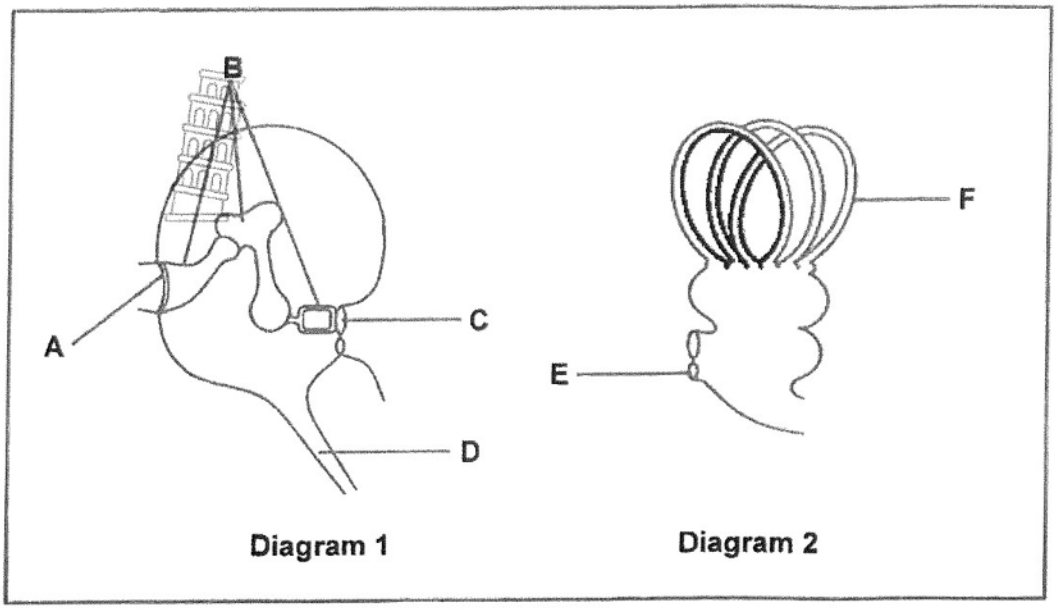


Diagram 1 **Diagram 2**

1.5.1 Identify part **F**. (1)

1.5.2 Give the collective term for bones **B**. (1)

1.5.3 Give the LETTER and NAME of the structure that:

(a) Equalises pressure between the outer and middle ear (2)

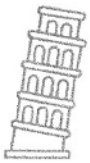
(b) Creates pressure waves in the inner ear (2)

1.5.4 Name the receptors that are stimulated by a change in the:

(a) Position of the head (1)

(b) Direction and speed of movement of the head (1)
(8)

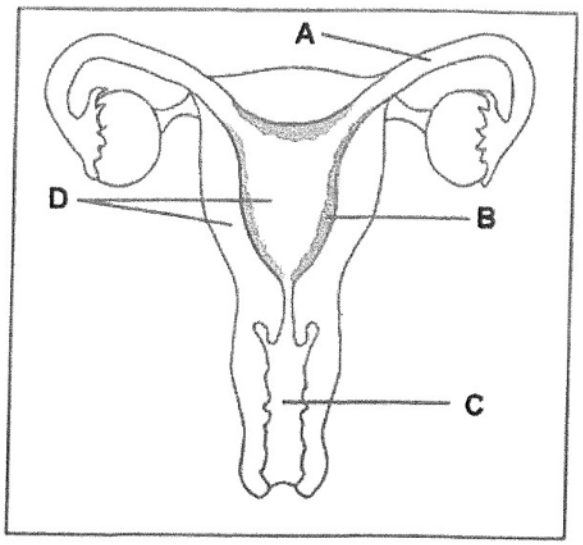
TOTAL SECTION A: 50



SECTION B

QUESTION 2

2.1 The diagram below represents the female reproductive system.



2.1.1 Identify part **B**. (1)

2.1.2 Name the process that takes place in part **A** that leads to zygote formation. (1)

2.1.3 Describe the process named in QUESTION 2.1.2. (1)

2.1.4 Describe the development of the zygote until implantation occurs. (4)

2.1.5 Explain TWO ways in which part **D** is structurally suited for gestation. (4)

2.1.6 Describe how the secretion of the prostate gland provides protection for the sperm from the conditions in part **C**. (2)
(13)

3.2 Geotropism refers to the movement of a part of a plant in response to gravity. This tropism is controlled by auxins.

3.2.1 Describe the role of auxins in roots. (3)

3.2.2 When a plant is placed horizontally, with light coming from all directions, the auxins will accumulate on the lower side of both the stem and the roots.

Explain the difference in the response of the stem and the roots after a few days. (4)
(7)

3.3 Hyperaldosteronism is a disorder caused by the oversecretion of aldosterone and has been linked to high blood pressure in humans.

Scientists investigated the influence of increased aldosterone levels on blood pressure.

The procedure was done as follows:

- 1 688 healthy volunteers, aged 55, participated in the investigation.
- The participants' blood pressure was measured and recorded before the start of the investigation.
- The participants were injected with a dose of aldosterone in the morning and their blood pressure was measured every hour for 12 hours.
- This procedure was followed over four days for each individual and the average blood pressure was calculated.
- All participants followed the same diet during the period of the investigation.

3.3.1 Name the gland that secretes aldosterone. (1)

3.3.2 Identify the:

(a) Independent variable (1)

(b) Dependent variable (1)

3.3.3 Give TWO reasons why the results of the investigation may be considered reliable. (2)

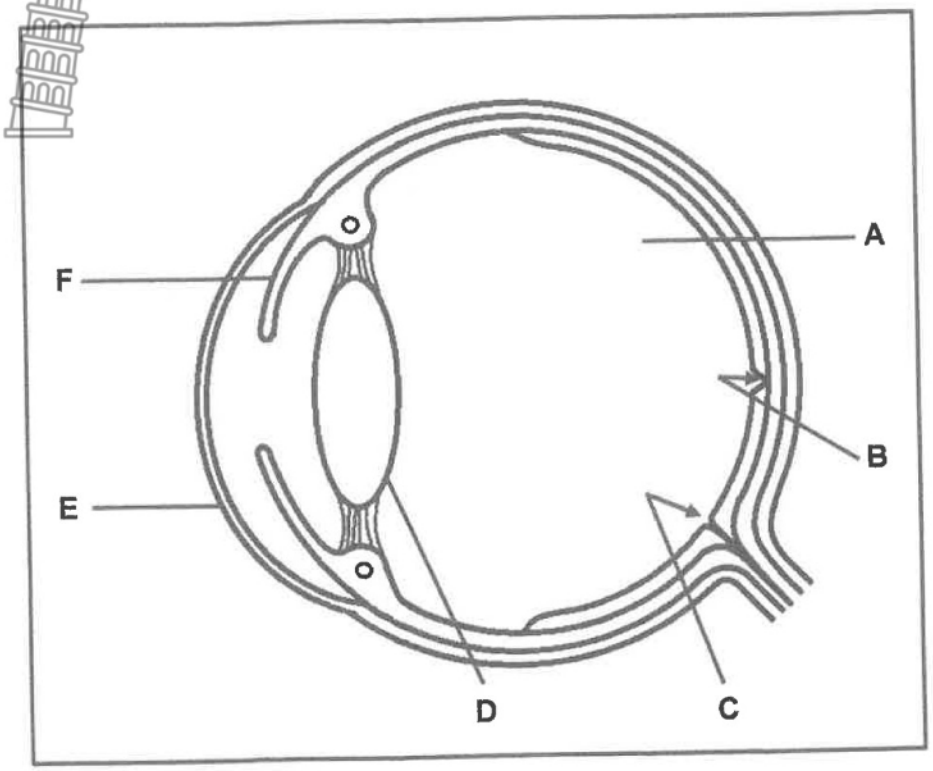
3.3.4 Explain TWO reasons why it was important for the participants to follow the same diet during the investigation. (4)

3.3.5 Explain why the participants' blood pressure was measured before the start of the investigation. (2)

3.3.6 Explain why the levels of salt in the urine of participants is expected to decrease after being injected with aldosterone. (3)
(14)

3.4 Describe how the secretion of adrenalin causes increased energy production in an emergency situation. **(8)**

3.5 The diagram below represents the human eye.



3.5.1 Identify structure **F**. (1)

3.5.2 State TWO functions of fluid **A**. (2)

3.5.3 Describe the structural difference between area **B** and area **C**. (2)

3.5.4 Name the visual defect that occurs when the curvature of part **E** is uneven. (1)

3.5.5 Explain how the sight of a person will be affected if cataracts developed in part **D**. (3)

3.5.6 Describe the process of accommodation that takes place when an object is less than 6 metres away from the eye. (6)
(15)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150