KWAZULU-NATAL PROVINCE

EDUCATION

REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

LIFE SCIENCES

COMMON TEST

SEPTEMBER 2024

Stanmorephysics.com

MARKS: 50

TIME: 1 hour

This question paper consists of 10 pages including this page.

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INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

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

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SECTION A

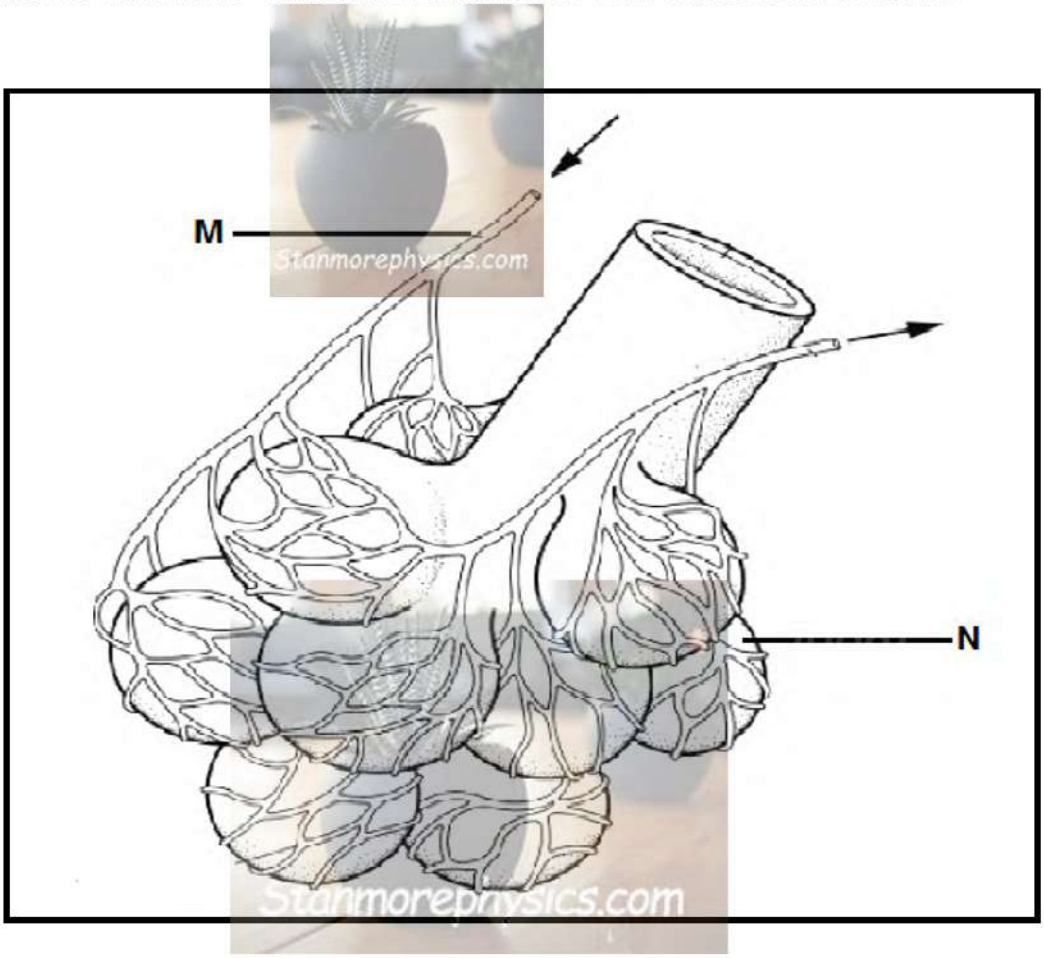
QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A to D) next to the question number (1.1.1 to 1.1.4) in your ANSWER BOOK, for example 1.1.5 D.

1.1.1 Which ONE of the following combinations of factors contribute to an increase in the size of a population?

A Mortality and natality
B Natality and emigration
C Immigration and natality
D Emigration and immigration

QUESTIONS 1.1.2 AND 1.1.3 ARE BASED ON THE DIAGRAM BELOW.



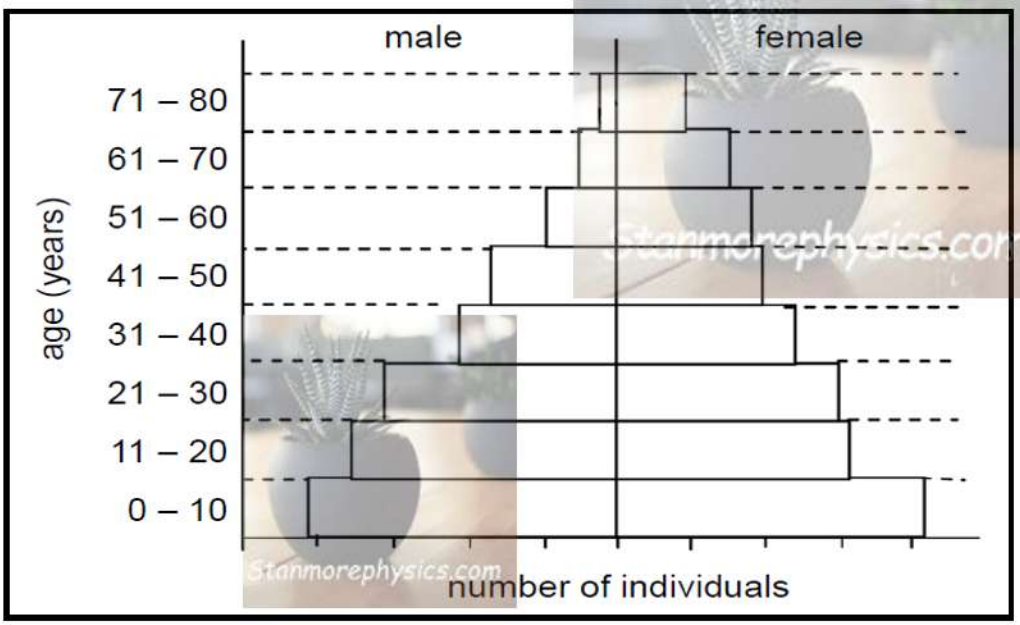
1.1.2 The blood vessel labelled **M** is a branch of the …

A coronary vein.
B aorta.
C pulmonary vein.
D pulmonary artery.

1.1.3 Part **N** represents the …

A bronchus.
B alveolus.
C bronchiole.
D trachea.

1.1.4 The diagram below shows the Age-gender pyramid of a country.



Which ONE of the following is the correct interpretation of the population represented above?

A Declining population; characteristic of a developing country
B Stable population; characteristic of a developed country
C Declining population; characteristic of a developed country
D Rapidly growing population; characteristic of a developing country

(4 x 2) **(8)**

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1.2 Give the correct **biological term** for each of the following descriptions. Write only the term next to the question number (1.2.1 to 1.2.3) in the ANSWER BOOK.

1.2.1 A group of organisms of same species living in same habitat at the same time.

1.2.2 The maximum number of individuals that an area can support.

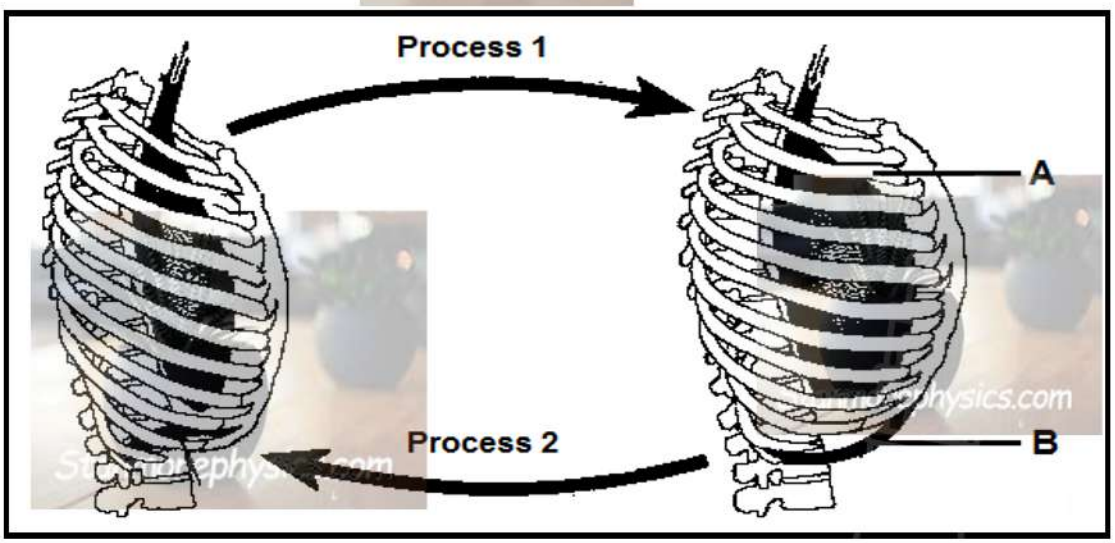
1.2.3 Tube that carries urine from the kidney to the bladder. (3 x 1) **(3)**

1.3 Indicate whether each of the descriptions 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 number (1.3.1 to 1.3.2) in the ANSWER BOOK.

COLUMN I		COLUMN II
1.3.1	Kittens competing for their mother's milk	A: interspecific competition B: intraspecific competition
1.3.2	Excretory organ	A: Skin B: Liver

(2 x 2) **(4)**

1.4 The diagram below shows a mechanical process of air moving in and out of the lungs in humans.



1.4.1 Identify:

(a) Process **1** (1)
(b) Process **2** (1)
(c) Part **B** (1)

1.4.2 State the changes in structure labelled **A (lifted** or **lowered)** during:

(a) Process **1** (1)

(b) Process **2** (1)
(5)

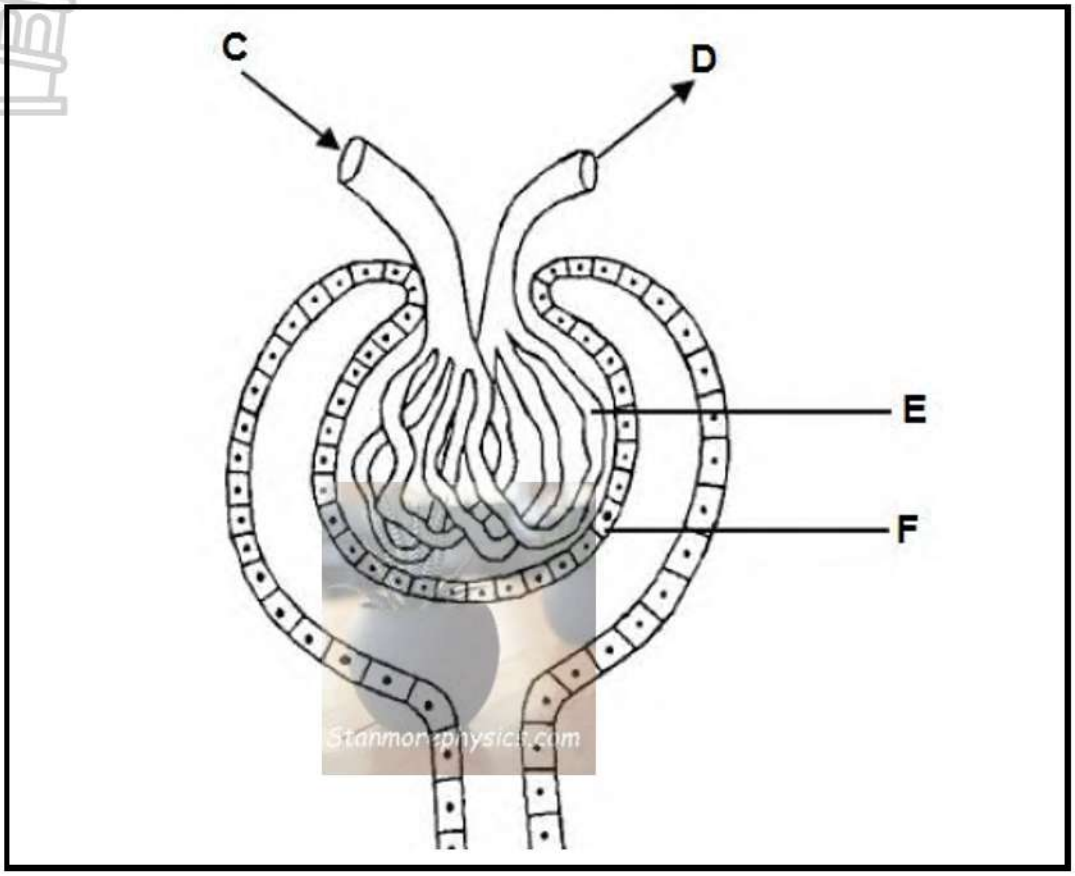
TOTAL SECTION A: 20



SECTION B

QUESTION 2

2.1 The diagram below shows part of a human nephron.



2.1.1 Identify:

(a) Part of the nephron shown in the diagram. (1)

(b) Part labelled **F**. (1)

2.1.2 Name the process that takes place in part **E**. (1)

2.1.3 Give the LETTER and NAME of the part that contains single layer of endothelial cells that assists in the process named in QUESTION 2.1.2. (2)

2.1.4 Explain the significance of part **C** being wider than **D**. (2)

(7)

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2.2 The table below shows the composition of inhaled air and exhaled air.

GAS	INHALED AIR	EXHALED AIR
Oxygen	21%	16%
Carbon dioxide	0,04%	4%
Nitrogen	78%	78%

2.2.1 Give ONE reason why the oxygen concentration of exhaled air is lower than the inhaled air. (1)

2.2.2 Calculate the difference between the carbon dioxide concentration of exhaled air and inhaled air. Show ALL workings. (2)

2.2.3 Describe the homeostatic control of carbon dioxide when it is high in the blood. (5)

(8)

TOTAL QUESTION 2: [15]



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QUESTION 3

3.1 Read the extract below on Diabetes insipidus.

> Diabetes insipidus (DI) is a condition in which the kidneys are unable to prevent the excretion of water. DI is not the same as diabetes mellitus types 1 and 2. However, untreated, both DI and diabetes mellitus cause constant thirst and frequent urination. People with diabetes mellitus have high blood sugar (glucose). Those with DI have normal blood sugar levels, but their kidneys are not able to balance fluid and salt in the body.
>
> DI caused by a lack of ADH (Anti diuretic hormone) is called central diabetes insipidus. When DI is caused by a failure of the kidneys to respond to ADH, the condition is called nephrogenic diabetes insipidus.

3.1.1 State ONE difference in people with diabetes insipidus and diabetes mellitus. (2)

3.1.2 Apart from lack of ADH, state ONE other cause of diabetes insipidus mentioned in the passage. (1)

3.1.3 With reference to the extract, explain why:

(a) Lack of ADH results to diabetes insipidus. (2)

(b) A person with DI will have constant thirst and frequent urination as a person with diabetes mellitus. (2)

(7)

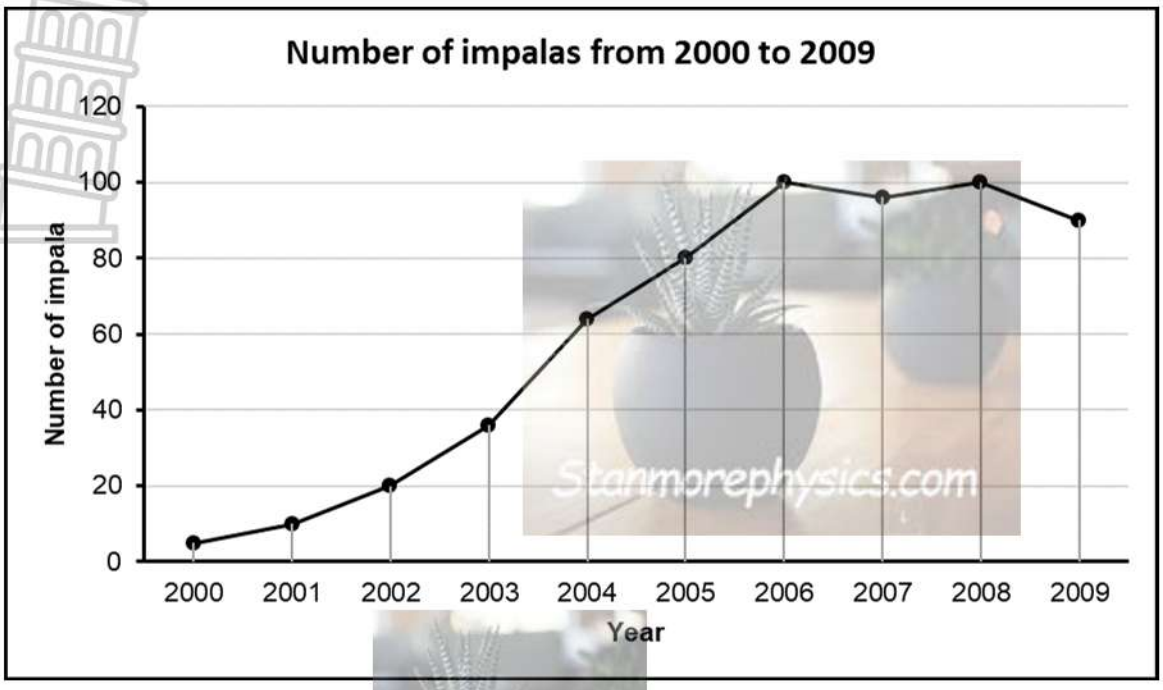
3.2 An investigation was conducted to determine the changes in the population size of impala in a nature reserve over time.

The procedure was as follows:

- Mark re-capture method was used every year from 2000 to 2009 to determine the population size of impala in the nature reserve.
- Each year, during the month of April, first sample of impala was captured, marked and released back to the nature reserve.
- The impalas were given 3 weeks after release to mix in their habitat after which the second sample was taken.
- The number of marked and unmarked impalas were counted.
- The population of the impala was determined using the Petersen index.

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The graph below illustrates the result of the investigation.



3.2.1 State:

(a) The aim of the investigation. (2)

(b) the dependent variable. (1)

3.2.2 State ONE way in which validity was ensured in the investigation. (1)

3.2.3 Identify the type of growth form show on the graph. (1)

3.2.4 Name the growth phase from 2000 to 2002. (1)

3.2.5 Explain the pattern of growth in the phase mentioned in QUESTION 3.2.4. (2)

(8)

[15]

TOTAL SECTION B: 30

GRAND TOTAL: 50

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