LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

NATIONAL

SENIOR CERTIFICATE

GRADE 11

LIFE SCIENCES PRACTICAL TASK 1

21 AUGUST 2023

MARKS: 40

TIME: 1 ½ hour

This question paper consists of 6 pages including the cover page and addendum.

INSTRUCTIONS AND INFORMATION

1. This question paper has an ADDENDUM attached. The addendum will be used to answer question 1.2
2. Answer all questions
3. Number all questions
4. Number your answers according to the numbering system used in this question paper.
5. Make all drawings in pencil and label them in blue or black ink
6. Write neatly and legibly

QUESTION 1

1.1 Answer the following questions based on an investigation. A scientist knew that as one moves to higher altitudes (height above sea level), the air becomes rarefied (has less oxygen). She therefore wanted to investigate the relationship between altitude and the number of red blood corpuscles in a person's blood.

1.1.1 State the aim of the investigation. (2)

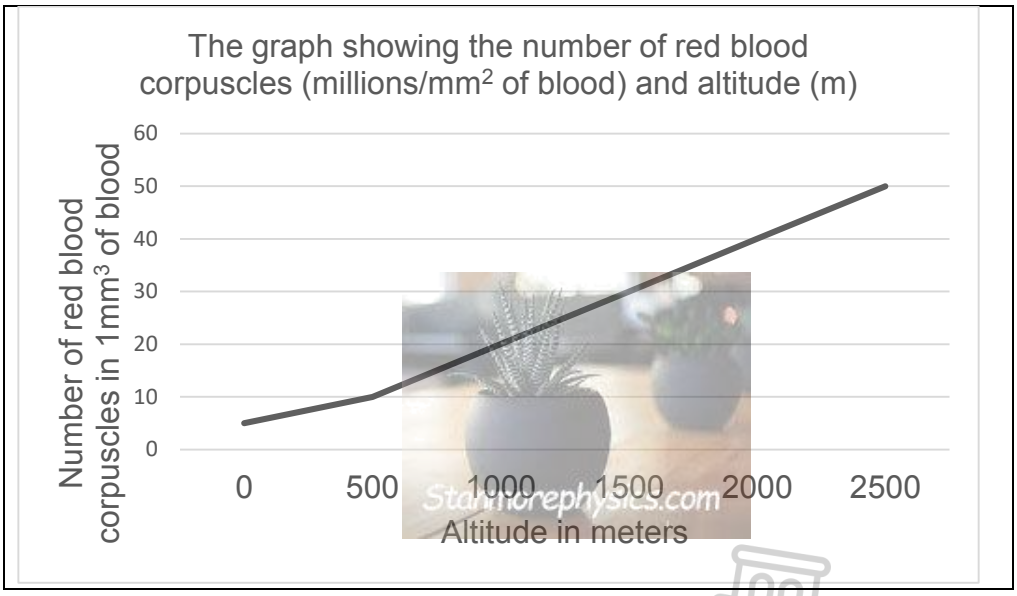
1.1.2 Write a hypothesis for the scientist's investigation. (2)

1.1.3 Identify:

(a) dependent variable (1)

(b) independent variable (1)

1.1.4 The scientist drew the following graph after she finished her investigation. Study it and answer the questions that follow.



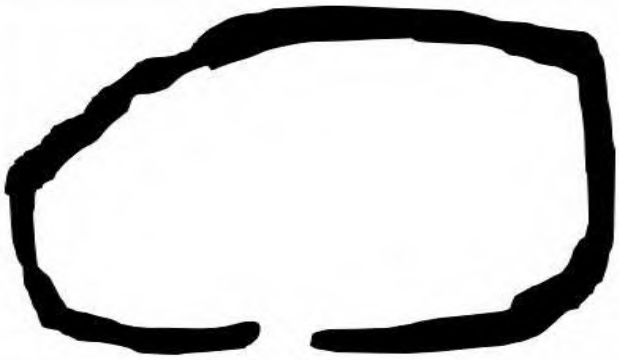
(a) What is the relationship between the number of red blood corpuscles and altitude? (2)

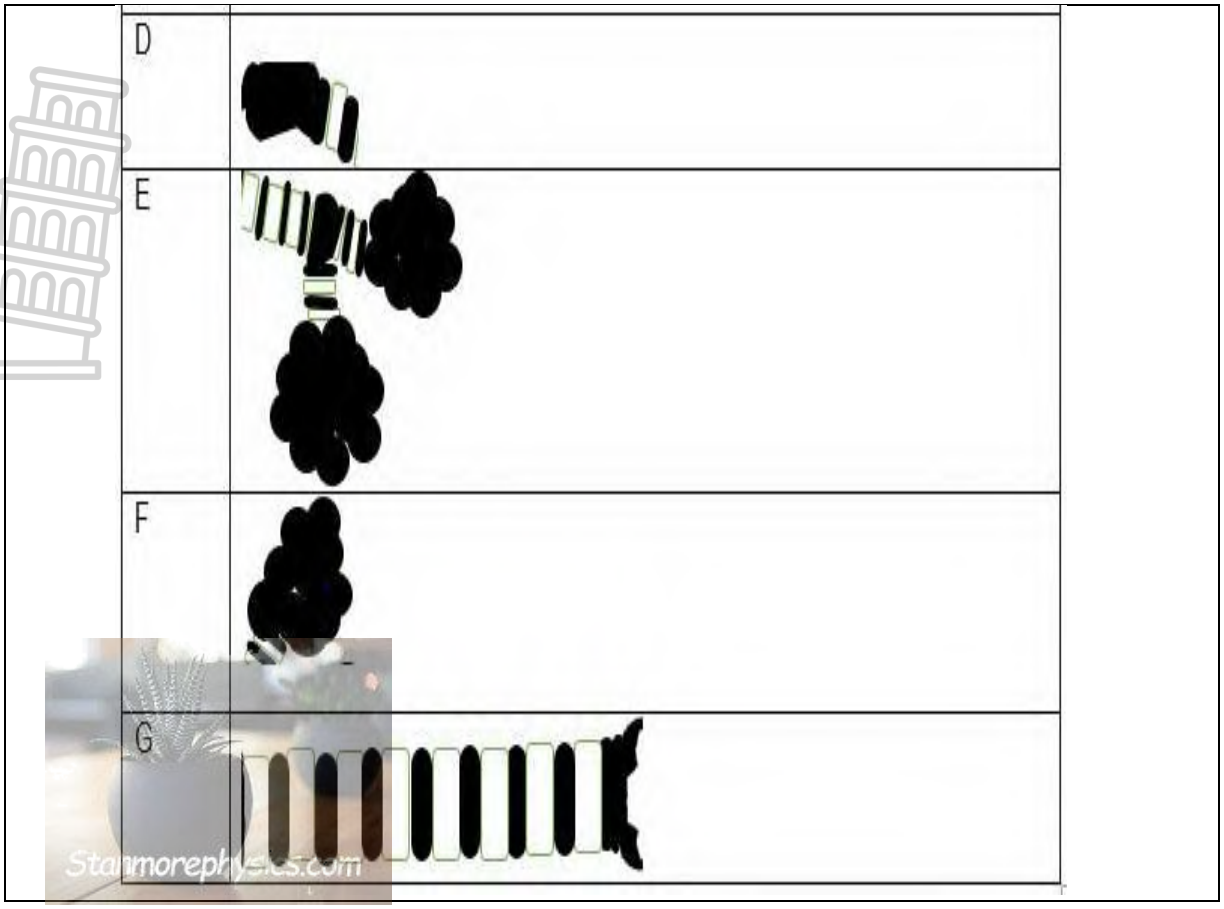
(b) Convert the data on the graph into a table. (6)

(14)

1.2 Read the instructions in the box below about the human breathing system.

- Study different pieces of the human breathing system below.
- Use a pair of scissors to cut each of the pieces from the ADDENDUM.
- Assemble ALL the pieces on your answer sheet
- Put them together, combine and paste them on your answer sheet to form a complete breathing system.
- You will be assessed on the following criteria:
  - The use of all the pieces
  - The correct combination and positions of pieces to form a whole.

PART	DIAGRAM OF THE PART
A	
B	
C	



(6)
[20]

QUESTION 2

2.1 The table below shows the amount of various gases in the air we breathe in and the air we breathe out.

Air	Air breathed in	Air breathed out
Oxygen	20%	16%
Carbon dioxide	0.03	4%
Nitrogen and other gases	79%	79

2.1.1 Which air (air breathed in or out) contains most oxygen? (1)

2.1.2 Explain why it is necessary for the air mentioned in 2.1.1 to contain most oxygen. (2)

2.1.3 Name a component of "other gases," named in table, that is essential for the functioning of cells of the alveoli (1)

2.1.4 Draw a pie chat to show percentage of air breathed in.
Show your calculations. (6)

(10)

2.2 The box below contains a list of efficiencies of different parts of the human breathing system. Study the list and answer the questions below.

A. For the transport of oxygen to the tissues and carbon dioxide to the lungs
B. For protection of the lungs
C. To block gases
D. To increase the surface area for gaseous exchange
E. To reduce blood flow
F. To keep the trachea and bronchi open
G. To remove dust from the air that enters the lungs
H. To increase acidity
I. To provide a thin surface for the exchange of gases.

Study the table below with different parts of the breathing system and answer 2.2.1 to 2.2.5 by choosing the appropriate LETTER from the list that matches an efficiency. Write down only the number and the letter representing an efficiency e.g. 2.2.6 H

PART OF THE BREATHING SYSTEM	FEATURE	HOW THE PART IS ADAPTED FOR ITS FUNCTION
Alveolus	Lobed	2.2.1
	Lined by a single layer of squamous epithelium	2.2.2
	Richly supplied with blood capillaries	2.2.3
Thoracic cage	Consists of the ribs, sternum and vertebral column	2.2.4
Nostrils	Lined by hair	2.2.5

(5x2) **(10)**
[20]
GRAND TOTAL: 40