



education

**MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA**

**FURTHER EDUCATION
AND TRAINING**

GRADE 11

**LIFE SCIENCES
PRACTICAL TASK 2**

18 AUGUST 2026

MARKS: 30

TIME: 60 minutes

This question paper consists of 6 pages

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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 to the numbering system used in the question paper.
5. Present your answers according to the instructions of each question.
6. Do 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

Question 1

The picture below shows a model representing a human respiratory system



The steps below were followed in constructing the model:

Step 1: A pair of scissors was used to cut off the bottom/base of the empty 2-litre plastic bottle.

Step 2: the screw-on lid of the 2-litre plastic bottle was removed

Step 3: a nail was used to punch a hole at the centre of the screw-on lid.

Step 4: one straw was cut into 2 equal halves.

Step 5: A small slit was opened to fit the straw on the centre of the longer straw

Step 6: one half of each straw was inserted into the slit to form the Y-shaped tube and a masking tape was used to join them (must be airtight)

Step 7: Each balloon was attached to the tip of the Y-shaped tube.
Balloons should not have holes and the connection should be airtight

Step 8: the Y-shaped tube was inserted with balloons through the base of the plastic bottle and push the stem of tube into the hole of the screw-on-lid

Step 9: A rubber sheet/ plastic was cut off to fit the bottom/base of the empty 2- litre bottle and tie it with the string/attach it with masking tape

1.1 State TWO precautions when constructing a model like the one above

(2)

1.2 Describe what happens to the balloons when you:

(a) Push up the bottom of the model (1)

(1)

(b) Pull down the string on the bottom of your model

1.3 Name the parts of the respiratory system that are represented by the following parts of the model:

(a) Plastic bottle (1)

(b) Balloons (1)

(c) Single straw fitted in the hole of the screw-on lid (1)

(1)

(d) Y-shaped straw (1)

(e) Rubber sheet at the base of the plastic bottle

NSC

- 1.4 Explain TWO ways in which the model shown above is a poor representation of the structure of the human respiratory system

(4)

- 1.5 State TWO way in which humans can keep their respiratory system healthy

(2)

(15)

Question 2

- 2.1 Describe the homeostatic mechanism that takes place when the rate and depth of breathing increases due to a strenuous physical activity

(5)

(5)

Question 3

The table below shows the composition of fluid in renal vein and ureter

	Renal vein	Ureter
Component	Concentration (%)	Concentration (%)
Urea	3	200
Glucose	12	5
Amino acid	7	0
Salts	55	170
Creatinine	5	100

- 3.1 Regarding the contents of the renal vein and ureter, what conclusion can be drawn on the functioning of the kidneys?

(2)

- 3.2 Would you conclude that the person with a medical history report above suffers from diabetes mellitus? Explain your answer

(4)

- 3.3 Study the table below showing the processes taking place in kidney tubules of a healthy individual, then complete the table by writing only the required answer next to the question number

Substance	Quantity passing into capsular space	Quantity passing into collecting tubule	Quantity reabsorbed	Percentage reabsorbed
Water	172 dm ³	7.35 dm ³	164.65 dm ³	3.3.1 _____
Glucose	172 g	3.3.2 _____	172 g	100
Urea	47 g	21 g	3.3.3 _____	3.3.4 _____

(4)

(10)

Total [30]