



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 10**

**LIFE SCIENCES P3 (PRACTICAL)**

**EXEMPLAR 2012**

**MARKS: 60**

**TIME: 1 hour**

**This question paper consists of 4 pages.**

**QUESTION 1: OBSERVATION AND DRAWING SKILLS****20 MINUTES****NOTE TO TEACHER**

Give learners the following items:

microscope, onion (with epidermis removed), slide, cover slip, dropper and a small beaker of water

- 1.1 Make a wet mount slide of the onion epidermis.  
Your teacher will assess the preparation of your slide. (6)
- 1.2 Set up your microscope and then observe your slide under the microscope.  
Your teacher will assess the way in which you set up the microscope. (5)
- 1.3 Draw and label TWO cells of your specimen as seen under the microscope. (7)  
**[18]**

**QUESTION 2: CONDUCTING A PRACTICAL/INTERPRETING DATA 15 MINUTES****NOTE TO TEACHER**

Give learners the following items:

unknown sample (white powder – you may choose whether it should contain starch or not), boiled water in a beaker, a small test tube, iodine solution, Benedict's solution/Fehlings A and B, Biuret solution/Millon's reagent, water and a dropper

- 2.1 Test the unknown sample for the presence of starch. Write down whether it contains starch or not.  
Your teacher will assess the way in which you conducted the test. (5)
- 2.2 Study the table below which shows the results of certain tests on FIVE different food types: **A, B, C, D** and **E**.

| FOOD TYPE | NAME OF TEST AND COLOUR CHANGE |                |                          |
|-----------|--------------------------------|----------------|--------------------------|
|           | Benedict's/<br>Fehling's test  | Iodine<br>test | Biuret/<br>Millon's test |
| A         | Orange                         | Yellow         | Pale blue/White          |
| B         | Blue                           | Black          | Pale blue/White          |
| C         | Orange                         | Yellow         | Purple/Brick-red         |
| D         | Blue                           | Black          | Purple/Brick-red         |
| E         | Orange                         | Black          | Purple/Brick-red         |

2.2.1 Which food type (**A, B, C, D** or **E**) contains the following:

- (a) Only starch (2)
- (b) Only glucose (2)
- (c) Only protein and glucose (2)
- (d) Starch, glucose and protein (2)

- 2.2.2 Rice contains starch and protein, but no glucose.  
Which food type (**A**, **B**, **C**, **D** or **E**) is probably rice?

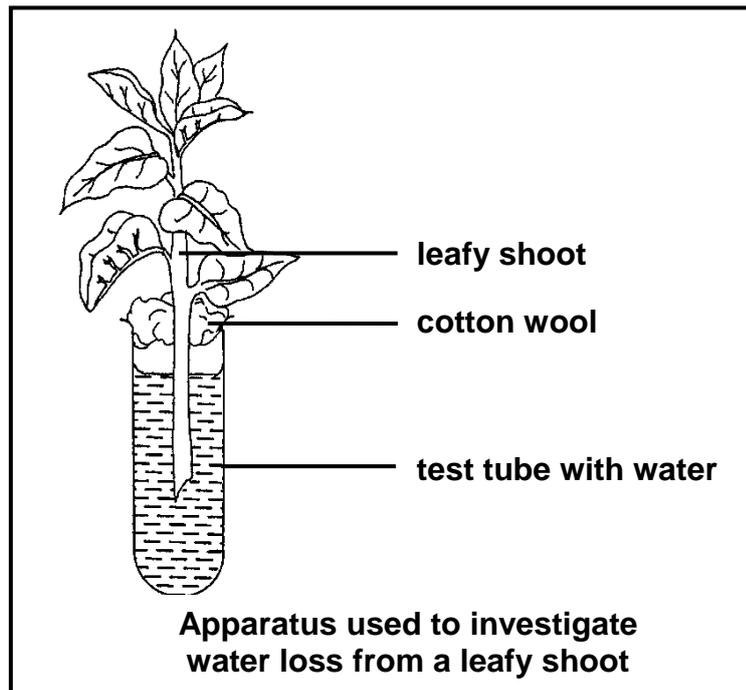
(2)  
[15]

**QUESTION 3: DRAWING A GRAPH/INTERPRETING DATA**

**15 MINUTES**

**NOTE TO TEACHER**

Set up the apparatus as shown in the diagram below.



The apparatus above was set up to investigate water loss from a leafy shoot. The total mass of the apparatus at the beginning of the investigation was 150 g.

The apparatus was then weighed at 10-minute intervals over the next 50 minutes. After 50 minutes, the apparatus was taken outdoors and weighed every 10 minutes for another 50 minutes.

The table below shows the decrease in mass of the apparatus over time in relation to the original mass of 150 g.

|                             | INSIDE |    |    |    |    |    | OUTSIDE |    |    |    |     |
|-----------------------------|--------|----|----|----|----|----|---------|----|----|----|-----|
| <b>Time (minutes)</b>       | 0      | 10 | 20 | 30 | 40 | 50 | 60      | 70 | 80 | 90 | 100 |
| <b>Decrease in mass (g)</b> | 0      | 1  | 3  | 4  | 5  | 9  | 11      | 21 | 24 | 33 | 39  |

- 3.1 Plot a line graph of these results.

(7)

- 3.2 Name TWO environmental factors that could have caused the greater decrease in mass after 50 minutes. (2)
- 3.3 State ONE way in which the reliability of the results could have been improved. (1)
- 3.4 Calculate the mass of the apparatus after 80 minutes. Show your working. (2)
- [12]**

**QUESTION 4: HEART DISSECTION****10 MINUTES****NOTE TO TEACHER**

Dissect a sheep's/pig's heart to show its longitudinal section. Insert pins with flags/labels (**A, B, C, D, E**) on it as follows:

- A – Aorta
- B – (Left) ventricle (label should read Chamber B)
- C – Pericardium
- D – Tendon
- E – (Right) atrium (label should read Chamber E)
- F – (Right) ventricle (label should read Chamber F)

Study the dissected heart with the labels and then answer the questions below.

- 4.1 Label parts **A, B, C, D** and **E**. (5)
- 4.2 State ONE function for each of parts **A, D** and **E**. (3)
- 4.3 Explain why the part labelled **B** has thicker muscular walls than the chamber labelled **F**. (3)
- 4.4 Explain the following:
- 4.4.1 Why are vessels found on the surface of the heart? (2)
  - 4.4.2 Why does blood not move back into the atria when the ventricles contract? (2)
- [15]**

**TOTAL: 60**