| Candidate Name | Centre Number | Candidate Number |
|---|---|---|
| | | |

# ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

**General Certificate of Education Ordinary Level**

# BIOLOGY 4025/3

PAPER 3 Practical Test

**SPECIMEN PAPER** 1 hour 30 minutes

Candidates answer on the question paper.
Additional materials:
As listed in Instructions to Supervisors
Electronic calculator
Pencil (B or HB is recommended)
Soft clean eraser
ruler (cm/mm)

**TIME** 1 hour 30 minutes

**INSTRUCTIONS TO CANDIDATES**
Write your name, Centre number and candidate number in the spaces at the top of this page.
Answer **all** questions.
Write your answers in the spaces provided on the question paper.
Use a sharp pencil for your drawings. Coloured pencils and crayons should **not** be used.

**INFORMATION FOR CANDIDATES**
The number of marks is given in brackets [ ] at the end of each question or part question.

**FOR EXAMINER'S USE**

| | |
|---|---|
| | |
| **1** | |
| **2** | |
| **TOTAL** | |

**This question paper consists of 8 printed pages.**



**[Turn over**

For Examiner's Use

**1** **(a)** You are provided with one thin slice of fruit **P** for question **1 (a)**, one thick slice of fruit **P** for question **1 (b)**and one thick slice of another fruit **Q** for question **1(c)**.

*Proceed as follows*:

1. Place the thin slice of fruit **P** on a white tile provided and cut the slice into two equal parts through the diameter.
2. Remove the central fleshy area of each half of the thin slices of fruit **P**,leaving the outer edge about 2-3 mm thick.

**(i)** Draw sketches of the strips in the spaces provided in **Table 1.1** and **Table 1.2** at the beginning of the experiment.

**Table 1.1**

| strip at the beginning | strip in distilled water after 40 minutes |
|---|---|
| | |

[2]

**Table 1.2**

| strip at the beginning | strip in sucrose solution after 40 minutes |
|---|---|
| | |

[2]

3. Place one strip in a petri dish containing distilled water and the other in a petri dish containing sucrose solution.
4. Leave the strips in the dishes for 40 minutes.

**During this time, continue with question 1 (b)**and **(c)**.

**(ii)** Observe and draw sketches of the strips in **Tables 1.1** and **1.2**after 40 minutes.

**(iii)** Explain the changes in shape of the strip in:

distilled water,_____

_____

_____

_____ [2]

For Examiner's Use

sucrose solution. _____

_____

_____

_____

[2]

**(b)** **(i)** Make a large, labelled drawing of a cross-section of the thick slice of fruit **P**.

[5]

For Examiner's Use

**(ii)** Calculate the magnification of the drawing.

*diameter of slice* _____ mm

*diameter of drawing* _____mm

*Magnification* _____ [3]

**(c)** Complete **Table 1.3** to compare the thick slices of fruits **P** and **Q** by listing **one** visible similarity and **three** visible differences.

**Table 1.3**

| | |
|---|---|
| similarity | |
| differences | 1. |
| | 2. |
| | 3. |

[4]

[Total: 20]

For Examiner's Use

**2** **(a)** You are required to prepare a slide of onion cells.

*Proceed as follows*:

1. Cut a small square piece (10 mm × 10 mm) from the onion that has been provided to you.
2. Add a few drops of distilled water on the microscope slide.
3. Peel off the epidermis of the onion square.
4. Lay the onion epidermis flat on the surface of the wet slide.
5. Add a drop of iodine solution to the onion epidermis.
6. Place the cover slip over the onion epidermis and gently press it down.
7. Drain excess fluid from the slide using filter paper.
8. Let the slide stand for 2-3 minutes.
9. View the slide on a light microscope.

**(i)** Draw and label cells of the onion epidermis as viewed at × 10.

[5]

For Examiner's Use

**(ii)** Draw and label cells of the onion epidermis under high power.

Magnification × 40

[5]

**(b)** Suggest reasons for the following procedures.

**(i)** Adding a few drops of water onto the slide before placing the onion epidermis.

_____

_____ [2]

**(ii)** Adding a drop of iodine on the onion epidermis.

_____

_____ [1]

**(iii)** Placing the cover slip over the onion epidermis.

_____

_____ [1]

**(iv)** Allowing the slide to stand for 2-3 minutes before viewing on a microscope.

_____

_____ [1]

For Examiner's Use

**(v)** Gently pressing the cover slip.

_____

_____ [1]

**(c)** **(i)** Name cell structures that you observed on the onion cells that can also be observed on an animal cell.

_____

_____

_____ [3]

**(ii)** Explain why onion cells have a regular shape.

_____

_____ [1]

[Total: 20]