THE MALAWI NATIONAL EXAMINATIONS BOARD

2008 MALAWI SCHOOL CERTIFICATE OF EDUCATION EXAMINATION

BIOLOGY

Subject Number: M022/II

Wednesday, 8 October

Time Allowed: 2 hour sessions
8:30 am onwards

PAPER II
(40 marks)

Practical

| Question Number	Tick if answered	Do not write in these columns	
1			
2			
3			
4			

Instructions

1. This paper contains 6 pages. Please check.

2. Write your **Examination Number** at the top of this page and of every sheet.

3. Answer **all** the **four** questions in the spaces provided on the question paper. The maximum number of marks for each answer is indicated against each question. A pencil should be used for all drawings.

4. In the table provided on this page, **tick** against the question number you have answered.

Turn over

1. You are provided with specimens **X** and **Y**.

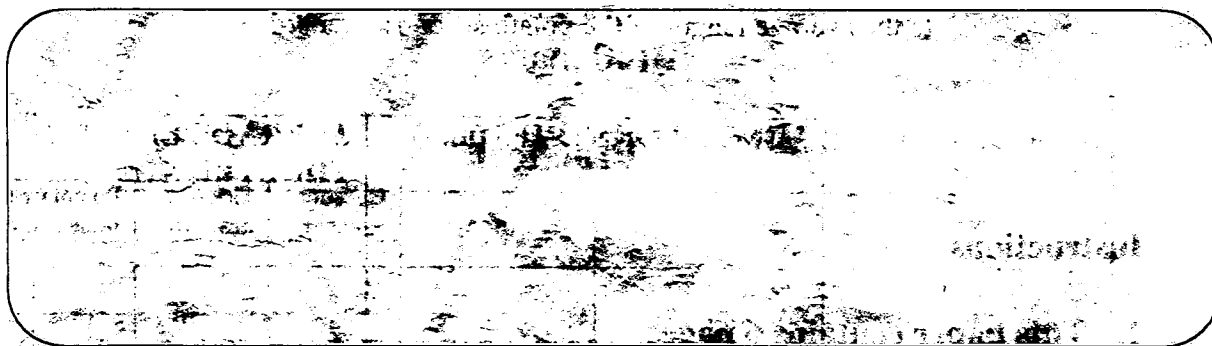   a. Draw specimen **Y** and label any **three** parts.
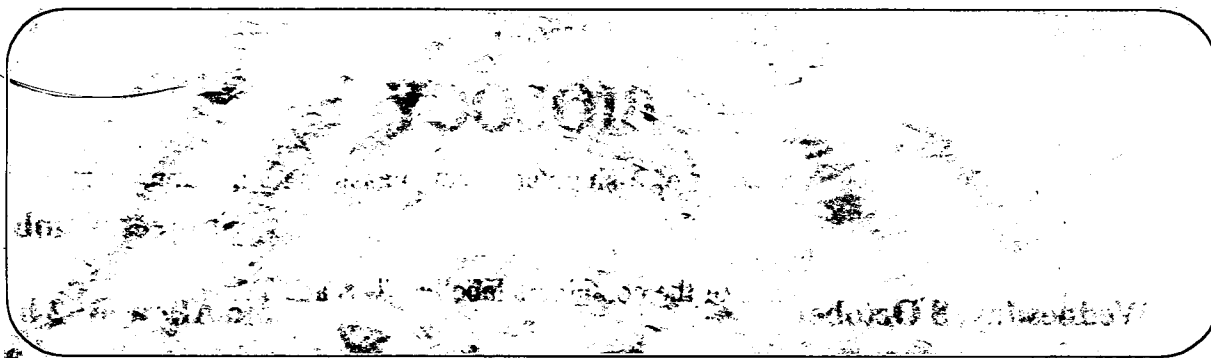
                                                                    (4 marks)

    b. Calculate the magnification of your drawing.

                                                                    (3 marks)

    c. (i) Which **one** of the two specimens could withstand dry conditions?

        _____

                                                                    (1 mark)

        (ii) Explain your answer to **1c(i)**.

        _____

        _____

                                                                    (2 marks)

    d. Give any **one** product of specimen **X**.

        _____

        _____

                                                                    (1 mark)

    e. To which group of plants does the plant of specimen **Y** belong?

        _____

                                                                    (1 mark)

2.   **Figure 1** shows an experimental set up to investigate the effect of light intensity on rate
      of gas production from a submerged pondweed. Results obtained were recorded in
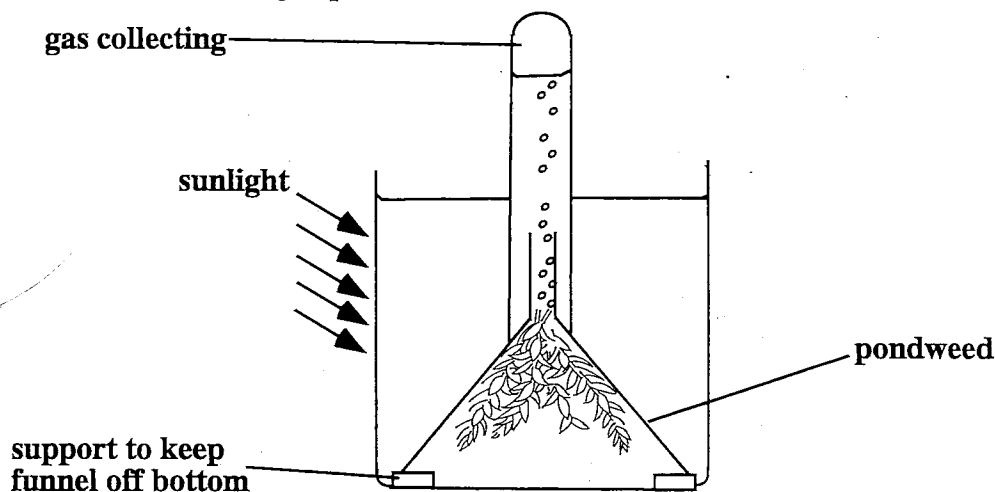   **Table 1.**

Figure 1

Table 1

LIGHT INTENSITY (CANDELAS)	NUMBER OF GAS BUBBLES/MIN
0	0
50	5
100	9
200	15
250	17
300	19
350	20
450	20

a.   On the graph paper, on **Page 4**, plot a graph of rate of gas production against light
      intensity.   **(5 marks)**

b.   Name the gas produced by the pond weed.

      _____

                                                                            (1 mark)

c.   What is the optimum light intensity for gas production?

      _____

                                                                            (1 mark)

d.   Explain the gas production between 350 and 450 candelas.

      _____

      _____

      _____

                                                                            (2 marks)
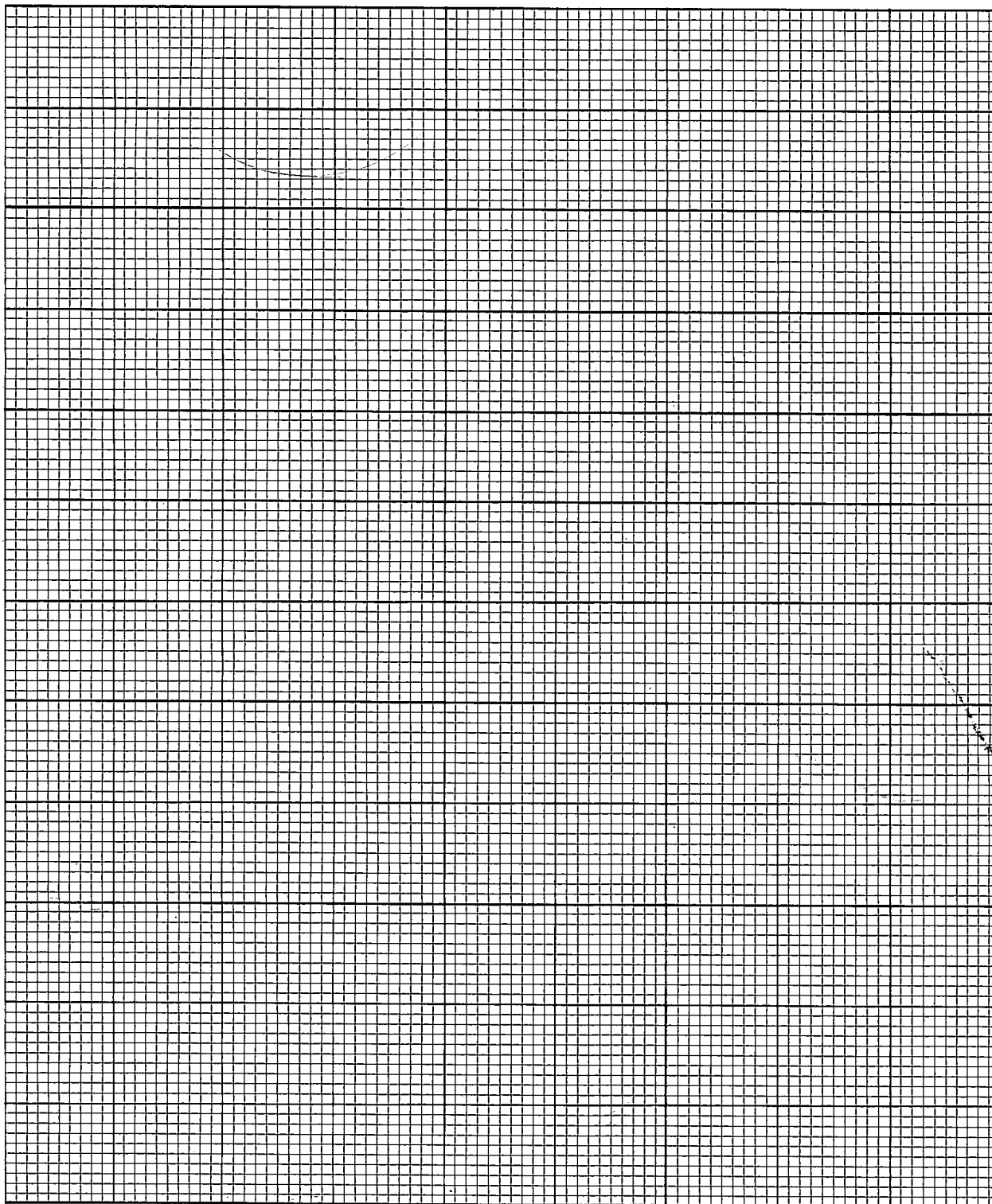
3.   You are provided with the following:

*   Irish potato tuber
*   Solutions in containers labelled **R, S** and **T**
*   Razor blade or scapel

Procedure:
-     Cut eight equal-sized strips of irish potato, each measuring 3 mm long, 5 mm wide
      and 5 mm high.

-     Put two strips into each of the containers labelled **R, S** and **T**.

-     Leave for 10 minutes.

a.   (i)   After 10 minutes, measure and record the length of the strips in **Table 2**.

      (ii) Calculate the average length of the potato strips and record.

SOLUTION	LENGTH OF STRIPS (mm)		AVERAGE LENGTH OF THE STRIPS (mm)
R			
S			
T			

                                                                              (6 marks)

b.   (i)   In which container did the strips decrease in length most?

      _____
                                                                              (1 mark)
      (ii) Explain your answer to **3b(i)**.

      _____

      _____
                                                                              (2 marks)
c.   (i)   Which solution had the highest water concentration?

      _____
                                                                              (1 mark)
      (ii) Give a reason for your answer to **3c(i)**.

      _____

      _____
                                                                              (1 mark)

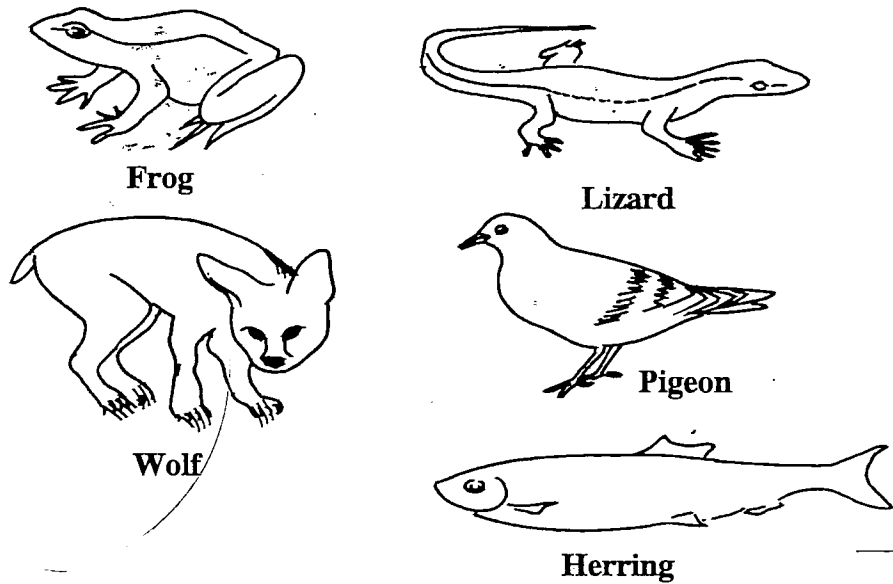4.   **Figure 2** shows diagrams of five animals. Use it to answer the questions that follow.

Frog

Lizard

Wolf

Pigeon

Herring

Figure 2

Using the diagrams in **Figure 2** construct a dichotomous key that can be used to identify
the animals.

(8 marks)

END OF QUESTION PAPER

NB: This paper contains 6 pages.