EXAMINATION NO.: _____

THE MALAWI NATIONAL EXAMINATIONS BOARD

2017 MALAWI SCHOOL CERTIFICATE OF EDUCATION EXAMINATION

BIOLOGY

Subject Number: M022/II

Thursday, 22 June

Time Allowed: 2 hour sessions
1:00 pm 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 printed 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.
5. You should hand in your question paper to the invigilator when time is called to stop writing.

1. You are provided with the following:

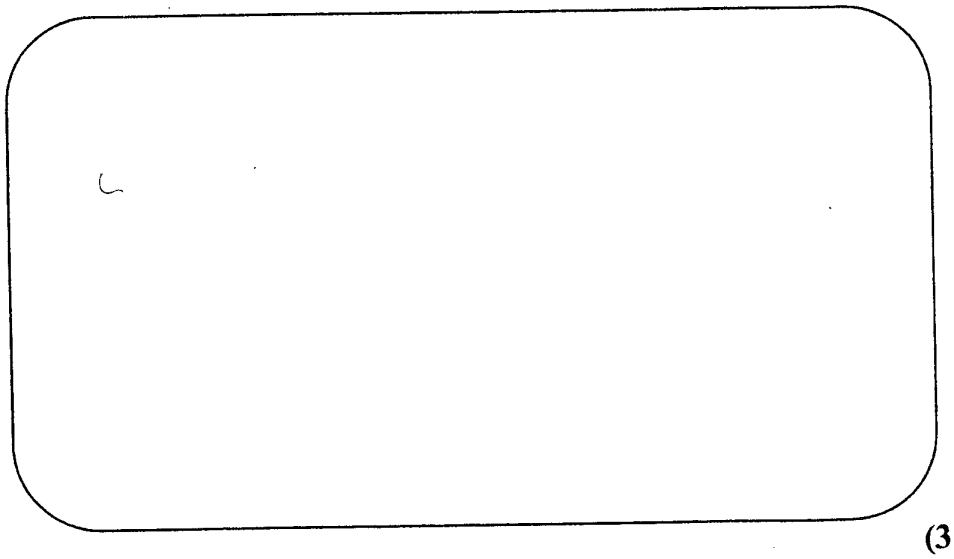
- Specimens labelled **X** and **Y**.
- A razor blade

Procedure

Using a razor blade:

- Cut the specimens transversally.

a. Draw the transverse section of specimen labelled **X** and label any **two** parts.



(3 marks)

b. State any **one** nutrient found in each specimen.

(i) **X**: _____ **(1 mark)**

(ii) **Y**: _____ **(1 mark)**

c. Explain any **one** evidence to show that the specimens originated from a common ancestor.

_____

_____

(2 marks)

d. Which specimen would turn the blue litmus paper to red if dipped in its juice?

_____ **(1 mark)**

Continued/...

2. You are provided with the following:
   - an irish potato tuber
   - scapel or knife
   - salt solution 50 mls in a beaker or any suitable container
   - 50 mls of water

   Using a scapel or knife
   - peel the irish potato
   - cut two strips each 3 cm long, 0.3 cm wide
   - put one strip in the salt solution and the other in the water
   - wait for 15 minutes

   a. After 15 minutes gently bend each strip. Record your observations in the table below:

Treatment	Observation
Strip put in water	
Strip put in solution	

(2 marks)

   b. Explain your observation for the strip:

   (i) put in the salt solution

_____

_____

_____

(3 marks)

   (ii) put in water

_____

_____

(2 marks)

   c. Suppose the irish potato was allowed to germinate and cut along the growing part and drops of iodine solution were added to the cut surfaces.

   (i) Describe the result that would be obtained.

_____

_____

_____

(2 marks)

   (ii) Give a reason for your answer in **c(i)** above.

_____

_____

_____

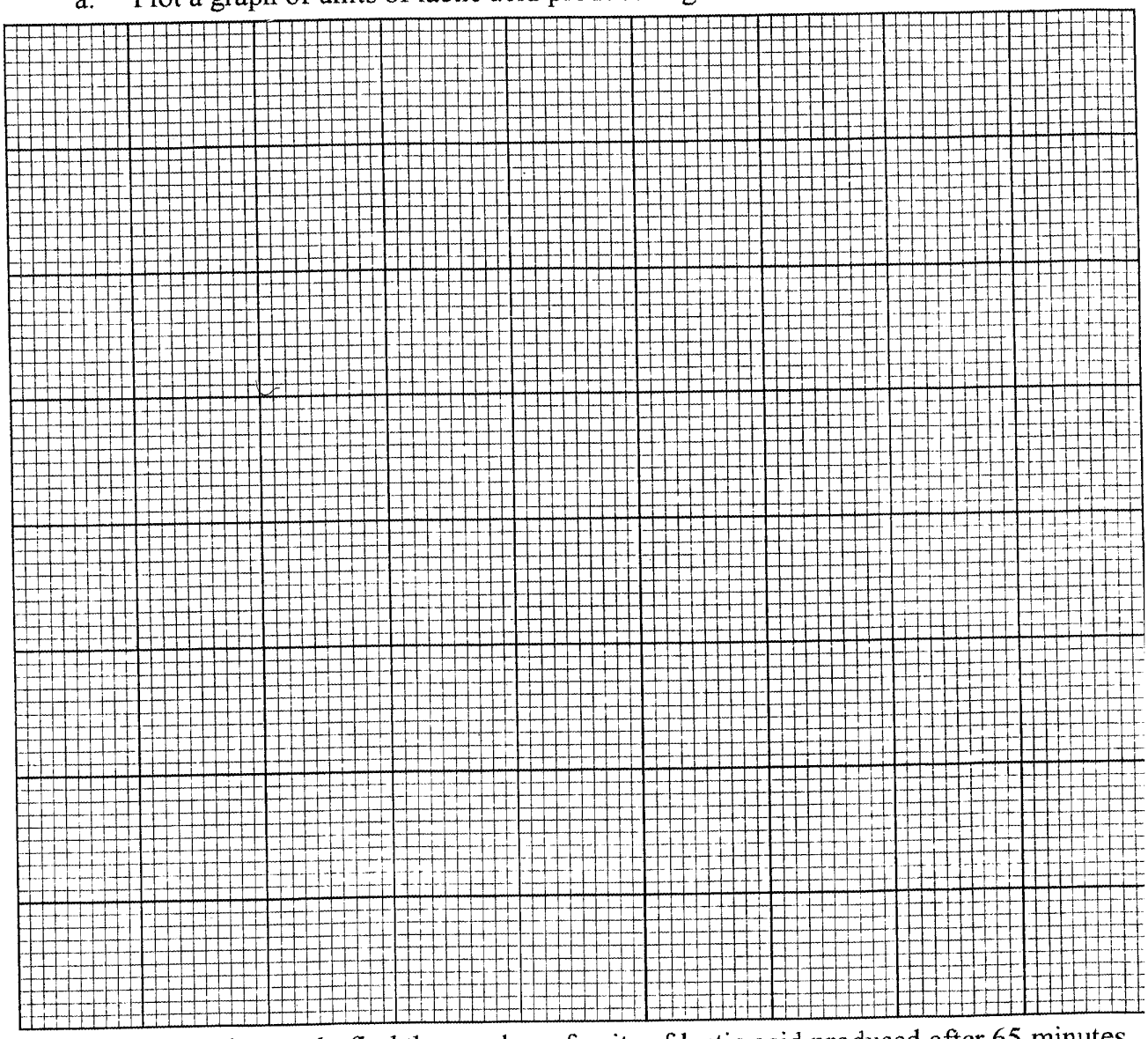
(2 marks)

Continued/...

3. The **Table** below shows the units of lactic acid produced in the leg muscles of an athlete during a race. Use it to answer questions that follow:

Time (mins)	0	10	20	30	40	50	60	70	80
Units of lactic acid	0	1	7	12	9	6	3	1	1

a. Plot a graph of units of lactic acid produced against time. **(6 marks)**



b. From the graph, find the number of units of lactic acid produced after 65 minutes.

(2 marks)

Continued/...

3. **(Continued)**

c. Explain why muscles produced less lactic acid towards the end of the race.

_____

_____

(2 marks)

4. **Figure 1** is a diagram showing foetus at different stages of development. Use it to answer questions that follow:

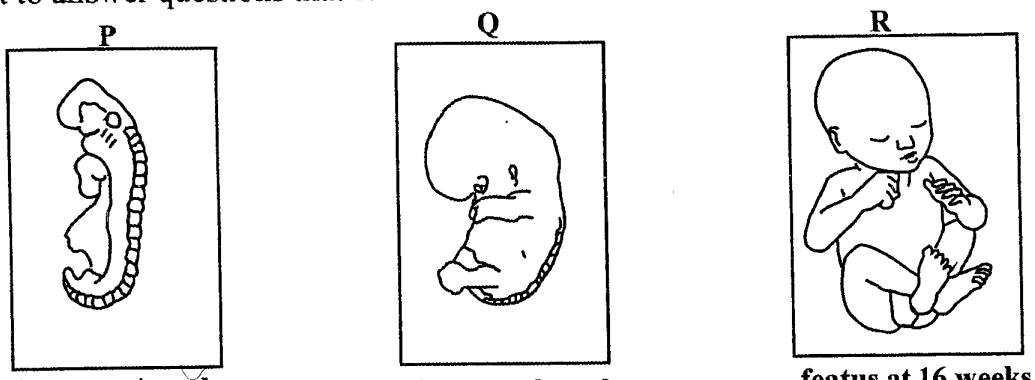


Figure 1

a. (i) Measure the longest axis of **R**. Give your answer in millimetres.

_____

(1 mark)

(ii) Calculate magnification of **R**. Show your working.

(3 marks)

b. State any **one** observable difference between **P** and **Q**.

_____

_____

(1 mark)

c. Name the organ that starts functioning in a baby soon after birth.

_____

(1 mark)

Continued/...

4. (Continued)

d. **Figure 2** is a diagram showing some disease causing organisms in man. Use it to answer the questions that follow:

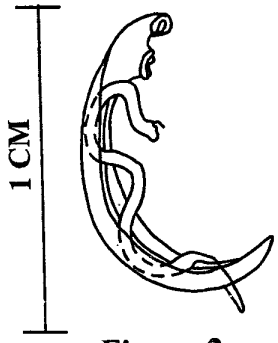


Figure 2

(i) Identify the parasites.

_____

(1 mark)

(ii) Name the disease caused by these parasites.

_____

(1 mark)

(iii) State any **one** mode of transmission of the disease in **4d (ii)**.

_____

_____

(1 mark)

(iv) Give any **one** symptom of the disease.

_____

_____

(1 mark)

(v) Give **one** way in which the disease can be controlled.

_____

_____

(1 mark)

END OF QUESTION PAPER

NB: This paper contains 6 printed pages.