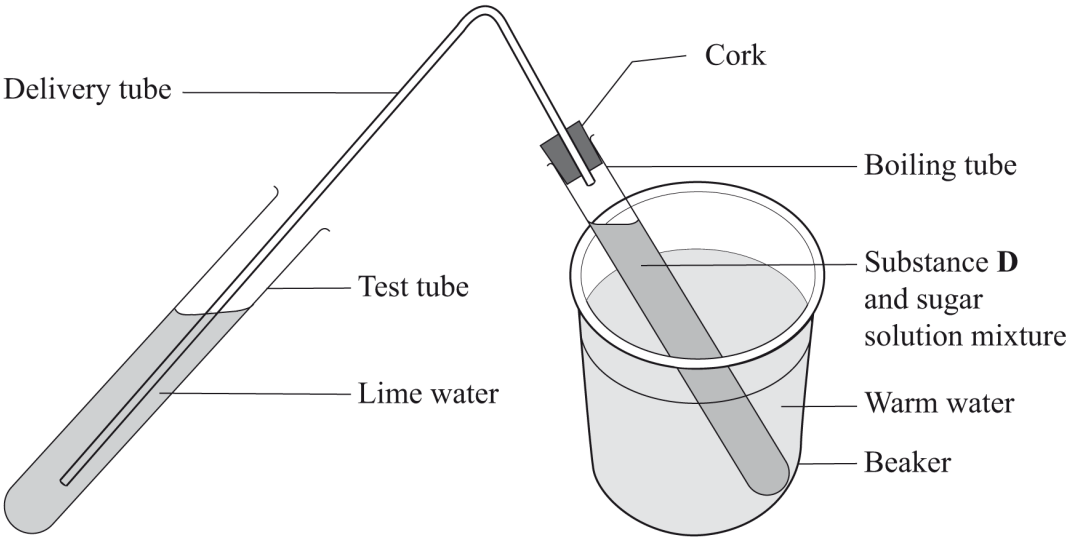


3.4.3 Biology Paper 3 (231/3)

1 (a) You are provided with solutions labelled **Q** and **R**, a substance labelled **D** and a delivery tube fitted with a rubber bung/cork.

I Label solution **Q** as **lime water**.
II Label solution **R** as **10% sugar solution**.
III Add substance **D** to the 10% sugar solution.
IV Tightly close/plug the boiling tube with the rubber bung/cork fitted with a delivery tube.
V Dip the other end of the delivery tube in the test tube containing lime water.
VI Put the boiling tube in the warm water bath at 40°C and allow the set up to stand as shown in the diagram below.
VII Observe the set up for about 15 minutes.



(i) State the observations made in the lime water. (2 marks)

(ii) Explain the observations made in the lime water. (2 marks)

(iii) Name the physiological process that was being investigated. (1 mark)

(iv) Write a word equation for the physiological process investigated. (1 mark)

(v) Why was the warm water bath used in the experiment? (2 marks)

(b) Put a drop of the contents in the boiling tube on a microscope slide. Stain with a drop of methylene blue and cover with a cover slip.
Observe it under a light microscope using low, medium and high power objective lenses.

(i) Draw and label one of the structures observed under the high power objective lens. (3 marks)

(ii) State the magnification of your drawing. (1 mark)

(iii) State the identity of substance **D**. (1 mark)

2 You are provided with specimens labelled **E** and **F**.

(a) (i) Name the sub-division to which the specimens belong. (1 mark)

(ii) Using observable features on the specimens, give **two** reasons for your answer in (a)(i) above. (2 marks)

(b) State the differences between the

(i) Leaves of specimens **E** and **F**. (5 marks)

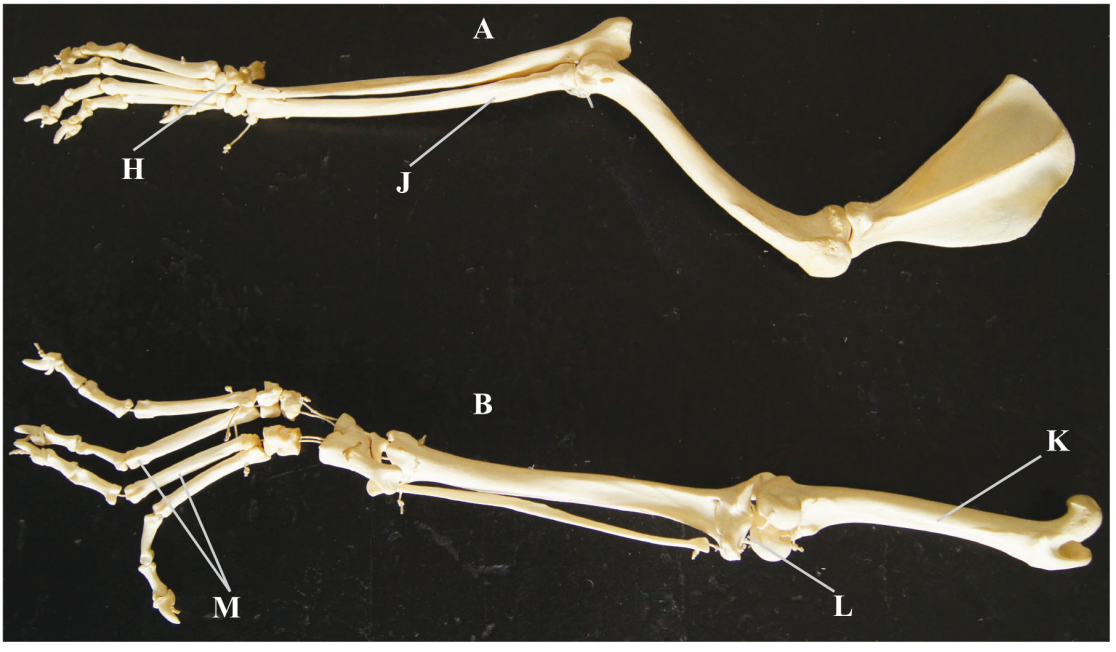
LEAF **E** LEAF **F**

(ii) Stems of specimens **E** and **F**. (2 marks)

STEM **E** STEM **F**

(c) Using observable features on the specimen, state the adaptation of the stem of specimen **E** to its habitat. (4 marks)

3 The photograph below shows two (**A** and **B**) skeletal limbs of a certain mammal.



(a) (i) Which of the two (**A** and **B**) skeletons represents a forelimb? (1 mark)

(ii) State **two** features observable on the skeleton to confirm your answer in (a)(i) above. (2 marks)

(b) Name the bones labelled **J**, **K** and **M**.

J ..... (1 mark)

K ..... (1 mark)

M ..... (1 mark)

(c) Which bone forms the second joint with the bone labelled **K**? (1 mark)

(d) Name the type of joint formed at the part labelled **H** and **L**.

H ..... (1 mark)

L ..... (1 mark)

(e) Apart from the bones, state the function of any **two** other components of a joint. (4 marks)

Component	**Function**