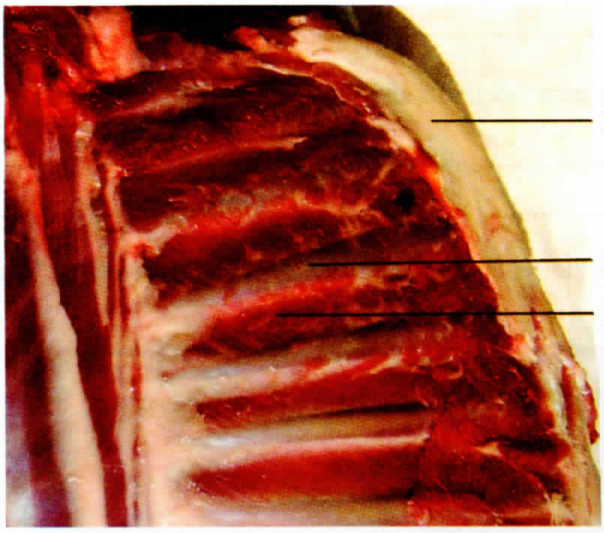
4.3.3 Biology Paper 3 (231/3)

1 (a) The photograph below shows the inner surface of the upper left side of the rib cage.



(i) Name the bone covered by the fatty tissue labelled **K**. (1 mark)

(ii) Explain the role of the part labelled **M** in inhalation. (5 marks)

(b) The photograph below shows a mammalian vertebra.

(i) State the view of the vertebra presented. (1 mark)

(ii) Name and state **one** function of the part labelled **T**.

Name ..... (1 mark)

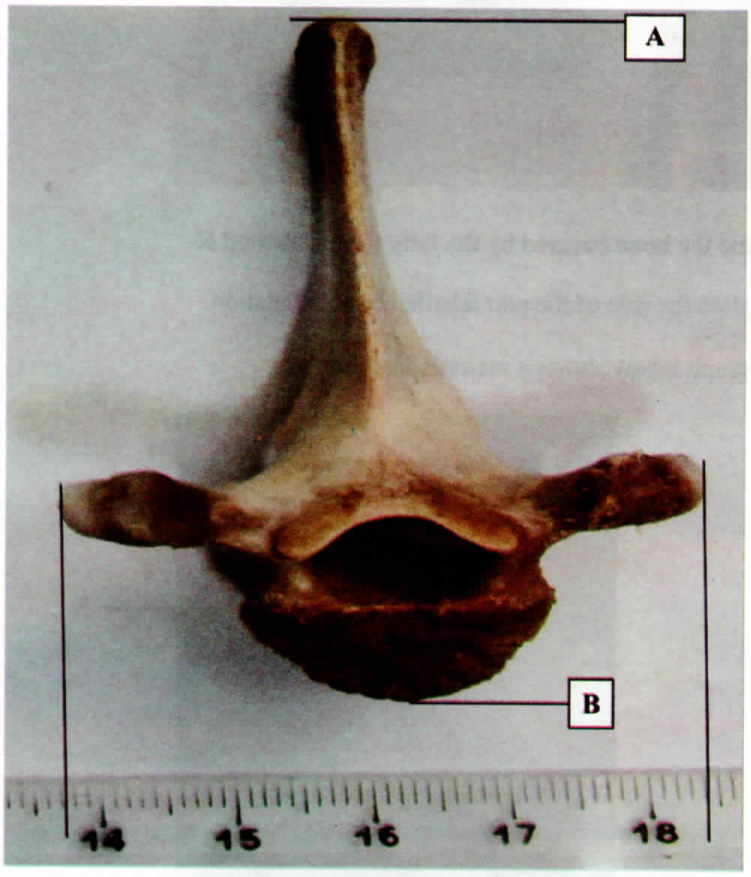
Function ..... (1 mark)

(iii) How are the parts labelled **S** and **V** adapted to their functions? (4 marks)

S .....

V .....

(c) The actual width of the vertebra below in cm is shown by a section of the ruler in the photograph.



(i) Determine the width of the vertebra on the photograph. (1 mark)

(ii) Calculate the magnification of this image. (2 marks)

(iii) Determine the actual length of the vertebra from point A to B. Show your working. (2 marks)

2 You are provided with a food sample labelled solution **C**. Using the reagents provided, carry out tests to identify the food substances present in the sample.

TEST FOR	PROCEDURE	OBSERVATION	CONCLUSION
1. Reducing sugars			
2. Non-reducing sugars			
3. Proteins			

(12 marks)

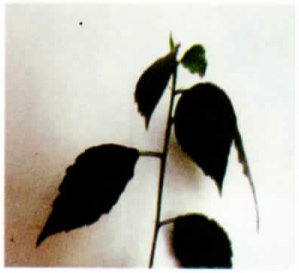
3 Below are photographs showing some observable features of leaves.

Compositae

Papilionaceae

Commelinaceae

Malvaceae



Nystaginaceae

Bignoniceae

Using the features in the order given below, construct a dichotomous key that can be used to identify the specimens.

- simple or compound leaves;
- leaf venation;
- leaf margin;
- arrangement of leaves on the stem;
- pinnate or trifoliate nature of leaves. (10 marks)